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Preview

ON THE COVER Hi-Res To Go: Headphone amp/DACs from Oppo and Sony. Additional gear from Emotiva, JVC, Koss, NEAR, and OutStandingScreens.



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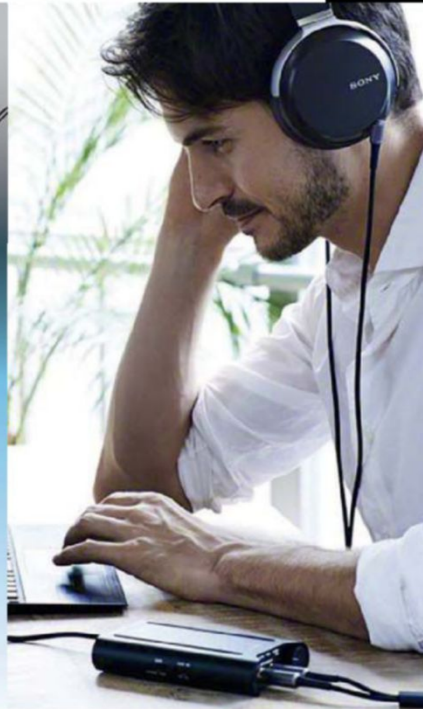


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DEFINITIVE TECHNOLOGY

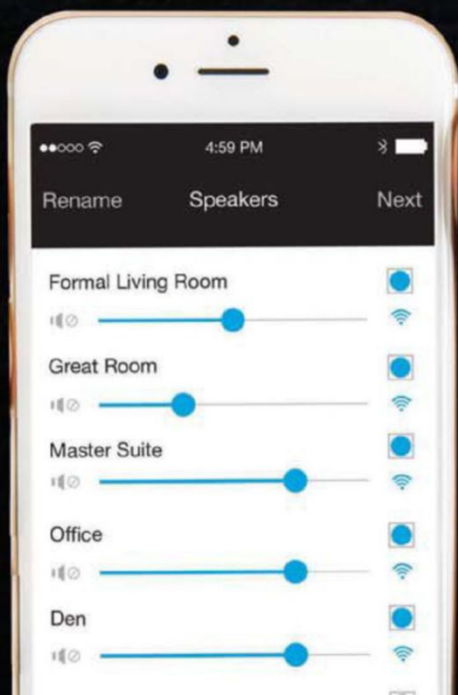
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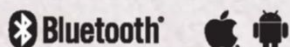
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— Darryl Wilkinson, *Home Theater Magazine*



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"Most exciting soundbar demo I heard"
— Brent Butterworth, *Sound&Vision Magazine*

We call the SuperCinema 3D Array, quite simply, "an extra-ordinary high-end loud-speaker system disguised as a soundbar." It is designed to combine the form factor of a sleek, stylish soundbar, with the performance of a true, high quality, component system. The complete ultra-high-performance system would include a powered subwoofer and a receiver or separates; plus the 3D Array achieves superb three-dimensional surround performance with or without rear surround speakers. Its 2.7" thin cabinet is constructed of aircraft-grade aluminum and contains six of GoldenEar's signature cast spider leg basket bass/midrange drivers and three High-Velocity Folded Ribbon Tweeters along with our breakthrough 3D Technology that cancels interaural crosstalk distortion for total sonic immersion.



High-Velocity Folded Ribbon Tweeter (HVFR)



High-Definition Cast-Basket Bass/Midrange Driver

"Awesome just got redefined"

— Darryl Wilkinson, *Home Theater Magazine*

The 3D Array sounds amazing and the experts certainly agree. Al Griffin of *Sound & Vision* wrote that the 3D Array System, "...delivered at least 90% of my main rig's [Triton Two Towers] performance." Chris Martens of *The Absolute Sound* raved, "...a soundbar system so good that audiophiles might buy it for music playback alone...if asked to recommend a soundbar to please finicky, hypercritical audiophiles, this would be my hands down choice." And *Home Theater*'s Darryl Wilkinson summed it up perfectly when he raved that, "the width and openness of the soundstage was absolutely incredible" calling it "an instant classic" that is "a must-listen-to, top-of-the shopping list, soundbar-to-beat...when it comes to soundbars awesome just got redefined."

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July/August 2015

TrackOne

OUT AND ABOUT

Enjoying Great A/V in Your Yard or on the Go Has Gotten Easier



**BY ROB SABIN,
EDITOR**

Sound & Vision has traditionally dedicated one of its summer issues to gear you can enjoy outdoors or on the road. In the old days, back when the magazine was still *Stereo Review*, that might have meant a review of a portable CD player or, going back further, even a classic Sony Walkman cassette player. It might even have included a test report for a car head unit. Maybe they'd try out a pair of premium headphones, but probably not—in those days, "good" headphones meant big, heavy cans that were at home in a living room (something like the Koss Pro 4A) rather than something lightweight, compact, and easily driven by a handheld music player. There was no discussion of portable movie watching in these pages; not only did the magazine not cover video back then, but there were no

personal screens on which to view anything while on the go, nor anything resembling a front projector industry for consumers, much less any projectors small enough to throw in your trunk and set up on a coffee table at your vacation retreat.

What strikes me about these modern times is how things have changed, while in some ways, staying the same. In this issue, you will indeed find a Sony Walkman and a pair of Koss headphones. The Walkman is now a solid-state high-resolution digital audio player, and the headphone is a lightweight, comfortable, fold-up model. Additionally, there's now an entirely new class of portable audio product—the headphone amp/DAC combo—that you can tote along with your player and 'phones to extract the very last bit of sound quality from hi-res files. And the head units? Well, they're absent. The car audio aftermarket is a tiny sliver of what it once was after being delivered a deathblow by tech-savvy automakers who began putting respectable (if not awesome) sound systems in their cars.

As for video, today's phones, tablets, and streaming cloud services now make it easy to watch TV shows and movies wherever you are, provided you don't mind looking at a small screen. If you're into a more immersive experience (which we are), there are some very tiny battery-powered pocket projectors available for a few hundred dollars as long as you're willing to sacrifice some resolution and brightness in return for portability (see *New Gear* this month for an example), and some relatively lightweight and small-footprint high-def projectors that'll blow out a huge, bright image for under a thousand bucks. Affordable, easy-to-set-up outdoor projection screens for your backyard are becoming more common as well; we've got a couple mentioned in this issue, including a ginormous 16 x 9-foot model from *OutStandingScreens.com*. That's a 220-inch-diagonal screen, if you do the math—way bigger than most folks have room for anywhere inside their home. Today, you can even send a signal to your backyard projector from your Blu-ray player inside with a wireless HDMI kit and reproduce the audio outside with a wireless Bluetooth speaker, or maybe a wired high-end outdoor sound system like the NEAR system we review this month, complete with its 12-inch buried in-ground subwoofer.

Bottom line: Wherever you're going, whatever your budget, whatever your bent, whether you want to listen privately to your hi-res tunes or share a great action film out back with family and friends...where there's a will, with today's digital technology, there's definitely a way.

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GoldenEar's New "World Beating Triton Five"

– Mark Fleischmann, *Sound & Vision*

"They absolutely rock the speaker world's foundation to the core ... delivering the kind of musical bliss some pay upwards of \$10,000 for" – Caleb Denison, *Digital Trends*

"Showstoppers ... they sounded obscenely good"

– Jerry DeI Colliano, *Home Theater Review*

In keeping with GoldenEar's tradition, the Five's auspicious debut at the 2015 CES Show had a jaw dropping effect on the world's audio press. Sound&Vision's Rob Sabin wrote that the Fives were, "spectacularly open and transparent with wide deep sound staging" and "nearly brought me to tears thanks to the tremendous detail the Fives rendered on a Buddy Holly recording". Stereophile's Herb Reichert wrote, "These loudspeakers disappeared better than any I have ever heard" and then added, "While the music was playing I swear I could see nymphs and goddesses dancing around the soundstage". Normally outspoken writers like Sound&Vision's Darryl Wilkinson said, "I am running out of superlatives", and HD Living's Dennis Burger raved, "Quite frankly stupefying ... bowled away doesn't scratch the surface".

"The value for the money here is clear off the charts"

– Chris Martens, *HiFi+*

GoldenEar's goal is to deliver to you absolutely the best sound possible for the money. Superbly lifelike three-dimensional imaging, ultra high resolution, tremendous dynamic range, extraordinary deep bass response, silky smooth high frequency extension along with you-are-there clarity and presence are all a result of GoldenEar's most advanced components and technologies. Best of all, the Fives will deliver exceptional performance with moderately priced receivers, while also allowing you to appreciate the subtle qualities of the world's finest audio components. And, just as importantly, they deliver state-of-the-art sound quality with two channel music as well as multi-channel home theater, including Dolby's new Atmos technology, when paired with our perfectly matched center channel, surrounds, height speakers and subs.

"Best Sound for the Money at CES 2015"

– Robert Harley and Neil Gader, *The Absolute Sound*

The Triton Five is already adding illustrious new awards to GoldenEar's impressive collection. Although many focus on value for the money, some writers, like Sound Advice's Don Lindich, go further, giving them "Best Sound at the CES Show" and writing, "this is a cost-no-object preference for me". HD Guru's Gary Merson gave them "Top Pick Speaker at CES" and wrote, "They blew us away ... breaks new ground, outperforming competitors costing thousands more". SoundStage's Doug Schneider awarded a "Best System" honor. You owe it to yourself to visit your nearest GoldenEar dealer today!



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GoldenEar's ForceField Subs: "Near perfect... a tour de force"

— Andrew Robinson, *HomeTheaterReview.com*



"Thunderous...Room-Shaking"

— Al Griffin, *Sound&Vision Magazine*

GoldenEar's ForceField subwoofers are true over-the-top super subs that are especially remarkable for their compact size and unusually affordable prices. All three incorporate the same advanced technology and components including: DSP controlled high-power digital amplifiers (1000, 1200 or 1500 watts), ultra-fast long-throw high-gauss magnet structure drivers (8", 10" or 12") and pressure-coupled downward-firing quadratic planar infrasonic radiators. In addition, their uniquely shaped cabinets are not just attractive, but are also purposefully configured for dramatic performance benefits.

"Extraordinary bass prowess... I've never heard a sub this small go that deep"

— Steve Guttenberg, *The Audiophile*

With their high output capability, stunning impact, superbly musical bass articulation and breathtaking infrasonic low frequency capabilities, the ForceFields have received the highest praise from critics, experts and knowledgeable listeners around the world. Geoff Morrison of Residential Systems raved, "their thunder filled the room." AV Forums praised the, "monstrous output for such a small sub." Mark Fleischman of *Home Theater* wrote, "I was dumfounded" over their, "low frequency barrages with floor-shaking confidence." And to top it off, the British writer Stephen May raved, "this astonishing box can pressure-load a room like an angry Silverback" and Andrew Robinson warns, "Your walls, floorboards, and ceiling may just crap out on you." And, as Dennis Burger of *Tech Tell* observed, they are also, "shockingly musical!"

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July/August 2015 Volume 80/Number 6

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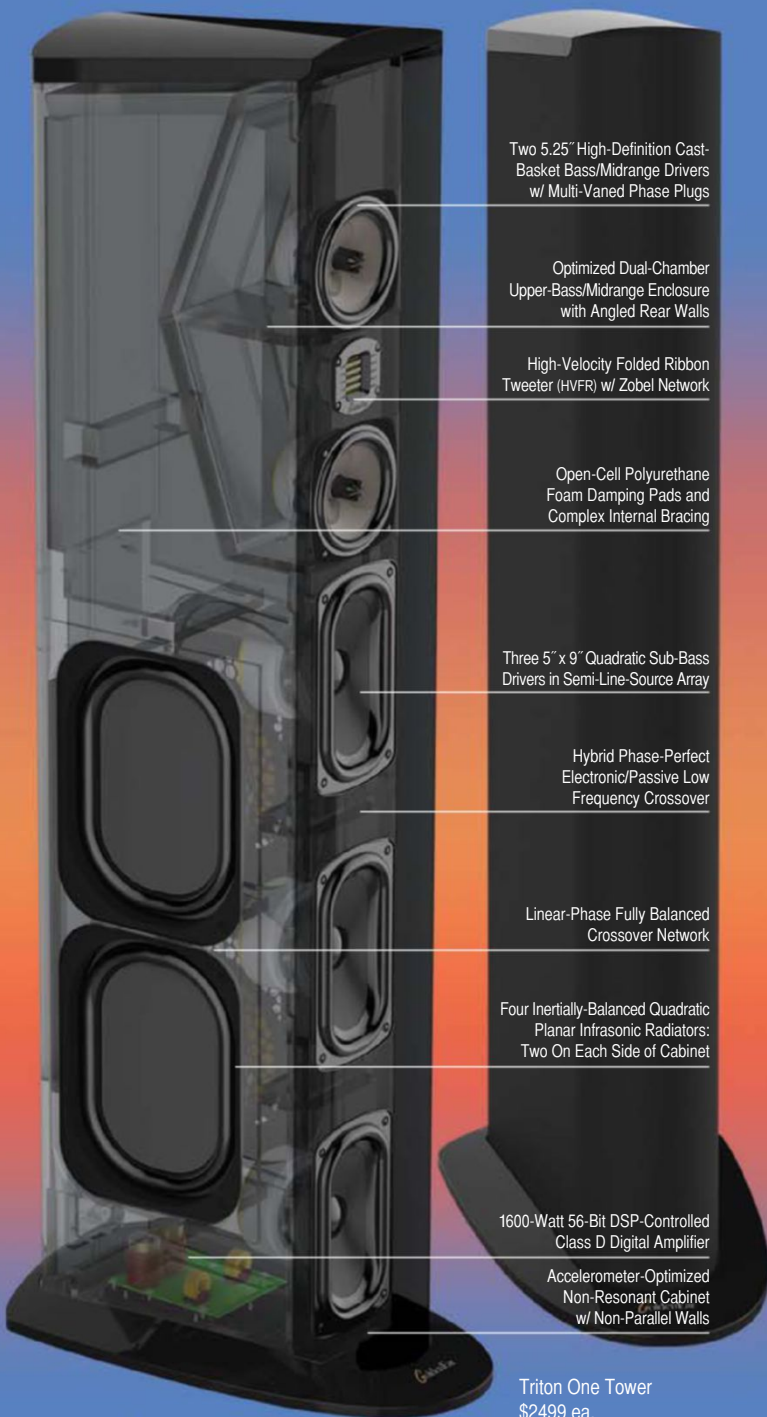
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GoldenEar has Engineered Our New Triton One to Perform Like a \$20,000+ Super Speaker!

"Revelatory ... cosmically orgasmic ... astounding performance-vs-price ... these speakers absolutely embalm the competition" – Darryl Wilkinson, *Sound & Vision*



"Triton One shames some speakers costing ten times as much ... it is an absolute marvel"

– Caleb Denison, *Digital Trends*

"Best High-End Value at CES 2014 ... Sandy has created a speaker that defies its price point"

– John Sciacca, *Residential Systems*

"Best of CES 2014 ... stunning realism ... the sound was truly grand and majestic"

– Roger Kanno, *SoundStage*

"Best Sound for the Money at CES 2014"

– Jonathan Valin, Kirk Midskog and Neil Gader, *The Absolute Sound*

Introducing Triton One, an evolutionary speaker that builds upon advanced technologies that have made Tritons mega-hits around the world. Stereophile called them, *"A Giant Killer Speaker"* and Robert Deutsch further added, *"it's not unreasonable to compare the sound of the \$4998 Triton One with speakers costing tens of thousands of dollars more"*. This new top-of-the-line flagship was engineered to deliver even better dynamics and bass than the extraordinary Triton Two, along with further refinement of all aspects of sonic performance. How well have we succeeded? In the words of HD Living's Dennis Burger, the Triton One delivers, *"... the sort of upper-echelon performance that normally only comes from speakers whose price tags rival a good luxury automobile"*.

Triton One "creates visceral, tangible waves of pure audio bliss"

– Dennis Burger, *HD Living*

Great sound is what it is all about and the Triton Ones deliver, as The Absolute Sound's Anthony Cordesman wrote *"they provide sustained musical pleasure and exceptional realism ... extraordinary sound quality and value ... one of the best buys in speakers ... highly recommended"*. The Ones were specifically engineered to excel with all types of music as well as movies. Best of all, they offer previously unheard of value, as Brent Butterworth wrote in *Sound & Vision*, *"I heard a few people saying the Triton One sounded like some \$20,000-and-up high-end towers, but I disagree: I think they sounded better than most of them"*. Hi Fi's Chris Martens raved the Ones are, *"jaw-droppingly good ... one of the greatest high-end bargains of all time with a dazzling array of sonic characteristics"*. And Darryl Wilkinson summed them up best, *"A Masterpiece ... GoldenEar has fully ushered in the Golden Age of the Loudspeaker"*. Hear them for yourself and discover what all the excitement is about.

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Letters

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The Good Ol' Days Before Hi-Res

I am writing in regard to the part of your editorial about hi-res audio (Track One, May). It's the first time I can remember in over 35 years that your magazine has hinted that the newest technology might be weaker than past technology. The industry never lets that happen.

I know you are thinking that old-timers (I'm 72) refuse to accept change in the form of technology and the modern products that the masses "must own." Maybe the old-timers are merely feeling sad that youngsters will never experience the quality that was once the norm, sort of like the taste of ripe fruit, which is no longer available from supermarkets.

A couple of years ago, my wife mentioned that we never listen to music like we used to, so I transferred at least 30 of our favorite CDs to an MP3 player for her. She used it for almost a year, including while on the treadmill. I offered to add more tunes from new CDs, but she finally switched to reading e-books on her miniPad that she downloads at the library. I still prefer real books. Music was turned into noise!

In my experience, the best-quality recorded audio ever was on Sony's Betamax video recorder, called Beta Hi-Fi. Betamax lost out to VHS, even though it was technically superior in every way. You know how "market forces" have nothing to do with quality! Beta Hi-Fi put the

stereo audio on the rotating video heads as opposed to the poor-quality linear audio tracking of VHS. This helical scanning was much like how our DNA is recorded on a double helix. I used to play the first 10 minutes of the movie *Top Gun* on Beta, as a demo for friends, who would walk away wobbly-kneed, like they were actually on the flight deck of an aircraft carrier. I've got a DVD copy of the same movie, and even with 7.1 surround sound, it does not compare. Earbuds aren't even worth mentioning.

I think the thing that is missing is what Mercury records used to call "Living Presence Stereo," or RCA's "Living Stereo." For some reason, it can't be digitized.

Gene Phillip
Great Falls, VA

Thanks for the reminisces, Gene. I, too, remember the tremendous advance represented by Beta Hi-Fi as an audio medium, but putting aside my nostalgia for that moment in time, I wouldn't trade out a modern digital lossless soundtrack in DTS-HD Master Audio or Dolby TrueHD, much less a TrueHD track with Atmos, for that analog stereo experience aided by the non-discrete, logic-based surround channel decoding schemes of the day. As for hi-res, I'm not sure what in my editorial suggested

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that hi-res will be “weaker than past technology”; perhaps it was my aside that I regard vinyl as having “better than CD sound quality.” I think it’s fairly well accepted by many audiophiles at this point (though still debated) that the classic Red Book-standard CD, combined with some pretty awful early implementations in filtering, signal clocking, and other previously unexplored encode and player engineering parameters, resulted in a pretty obvious step backward from the LP in some aspects of sound quality. Many have been fighting in the trenches for years to keep vinyl from extinction (our esteemed colleague Michael Fremer at analogplanet.com comes to mind) and can take some credit for its current resurgence (see below). But hi-res, assuming a file with good pedigree from an original high-quality master, has the potential to move the listener in a similar, soul-satisfying way while retaining the convenience and portability of digital delivery. It’s hardly fair to condemn all forms of digital audio delivery based on your wife’s lack of engagement with her MP3 rips played on an iPod while on the treadmill through god-knows-which earbuds “not worth mentioning.”—RS

Hi-Res Is Too Complicated

I appreciated Al Griffin’s summary of the many ways in which one may approach high-resolution audio (“Four Steps to Hi-Res Heaven,” Mayandsoundandvision.com). One problem is that there appears to be too many approaches to hear hi-res. The industry needs to standardize one approach such as has been done for CDs, vinyl, and DVDs so that it has a chance to become used by enough people to make it viable. Also, people need to be convinced that the difference in sound quality in hi-res compared to CDs and vinyl can really be heard by a given person’s ear and sound system. Until then, I would suspect that hi-res will continue to be a conglomeration of many kinds of files and setups.

Robert Cullers
Manhattan, KS

I have to agree that the lack of a single, standardized file type and the variety of elements that go into effectively building, managing, and playing back hi-res audio files will remain a deterrent to consumer acceptance, even among audiophiles. Another potential danger is the lack of consistency among the quality of the files themselves: The numerical indicators for sample rate and bit-depth applied to these files don’t always reveal a questionable heritage for the master that was used by the record label to create that file in the first place. The industry is beginning to address these issues slowly, but consumer education

will be key. Al’s feature on this can be used as a blueprint. The “Four Steps” he described are the things you need to do and are worth repeating here: (1) Get some computer software to manage and play your hi-res library; (2) get a decent-quality, asynchronous USB DAC to feed your files through; (3) make sure you’re listening on good-quality speakers or headphones (i.e., not crappy low-end earbuds; most of our readers have gear that’s more than adequate to hear the difference in a good hi-res file); and (4) download some decent hi-res music files.—RS

Vinyl’s Comeback: Feast or Famine?

Is vinyl coming back? I certainly hope not. I have been involved in audio and recorded music for 50-plus years. Back then, vinyl was all there was. What I remember about it was the clicks and pops caused by manufacturing defects. I remember having to take the LP out of the sleeve so the sleeve didn’t scrape along the vinyl; a sleeve scrape could cause surface noise. I remember handling the vinyl so as not to leave fingerprints. I remember the many

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different types of products to clean the vinyl and the antistatic guns. I remember dust bugs and stylus-weight gauges. I remember deciding whether to play vinyl wet or dry. I remember using a small camel-hair brush to remove dust from the stylus. I remember recalibrating the tracking weight of the stylus as it wore down. I remember scratches on the vinyl when friends or relatives changed an LP without my permission. I remember spending small fortunes replacing turntables, tone arms, and cartridges trying to find the perfect combination to hear the *music* pressed into that noisy vinyl. I say again: Is vinyl coming back? I certainly hope not.

Thomas Kirk

Cloverdale, CA

Yes, I am pretty "bullish on vinyl." It all started about eight years back when a friend donated a phono preamplifier and power amplifier to me; both were built with electronic vacuum tubes over 50 years ago. I fixed and then upgraded them. Using a 40-year-plus-young Swiss-made record player I had hidden in my basement, I made myself a vinyl fan. Today I have collected about 1,000 vinyl records (mostly classical music), 95 percent of which I picked up from neighborhood thrift stores for a buck apiece. With proper cleansing treatment, these records all sound superb! I am indeed very gratified.

Ken Pohlmann is right in pointing out the lack of affordable vinyl playback equipment plus the "fading infrastructure" of vinyl raw

material supply, which will make resurrecting the long dead analog music medium to its past glory almost impossible.

Let's see what happens. Personally, I have found vinyl music sound quality more emotional and engaging than its digital counterparts on CD and Blu-ray.

Jacke H. Lo

Via e-mail

Lighting Strikes, Again

I read with interest the letter from Brian Newell (June 2015) about his equipment loss from a lightning strike to his home, and your editor's inquiry about the experiences of others involving lightning. My mother lives in a rural area north of Prescott, Arizona, and they get a lot of summer lightning storms. When we upgraded her audio/video system several years ago with a large flat-screen TV mounted on the wall, I made sure to plug the TV, the satellite box, dish coaxial cable, antenna coaxial cable, phone line, audio system, *everything* into a good Panamax line conditioner, and then to the wall outlet. A year later, her house took a direct strike during an afternoon lightning storm. Mom was very frightened by the loud noise of the strike and immediate thunder, and the lightning fried a wall outlet as it searched for ground, but all of her electronics were perfectly fine. All we had to do was push the Panamax's reset button.

Gary Spencer

Via e-mail

Please allow me to suggest two ways to protect valuable electronics from lightning. While there is no such thing as a zero chance that lightning will rotisserie your electronics—just as there is no such thing as a zero risk that your home theater will be destroyed by a meteor strike—there is a precaution that you can take that will cut out most of the risk. Have a master switch that separates all your equipment from the house wiring. That way, the lightning has to come directly into the house (which is not likely if you have a lightning rod in your house, for which Ben Franklin was criticized for "tampering with the artillery of the heavens") and hit the isolated speaker wires, cables, or electronics themselves.

If you have an outdoor antenna to an FM tuner and you live out in the country where the radio stations you listen to are in different directions, you can make a rotary switch that selects from more than one antenna on one more tower, and the rotary switch can have a position that is not connected to any antenna or to an indoor antenna for local radio stations, but the idea is the same: You cut to a fraction the risk of the FM tuner taking a lightning strike.

Of course, these things can be done in addition to such things as lightning-arresting blocks where cables enter the house and surge protectors so that the risk of lightning damage can be almost as good as zero.

Dr. Robert Vincelette

Houston, DE

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Edited by Claire Crowley

DTS Answers Atmos

● Announcing DTS:X

In early April—a full nine months after Dolby Atmos had its coming-out party in New York—DTS officially announced DTS:X, an “object-based, multi-dimensional audio technology” for commercial cinema and home theater. We spoke with Dave Casey, senior director of program management for DTS:X to learn more about the new format and find out how it differs from Atmos.

S&V: Why does the world need another surround format? What does DTS:X bring to the home theater experience?

DC: DTS wants to bring immersive sound to as many people as possible. DTS:X provides flexibility and customization that will allow more people to experience incredible sound in their home.

S&V: How does DTS:X differ from Dolby Atmos?

DC: As DTS:X is based on audio objects versus channels, people with DTS:X-equipped home theaters

will be able to personalize their audio experience to deliver the best sound experience possible. This includes the freedom to place speakers in the locations that best fit the room and the ability to control dialogue levels and dynamic range in content that has been authored to support these functions. With spatial remapping with dialogue control, for example, if you are watching a sporting event and want to hear the announcers better, you will be able to adjust the volume of the announcers, as they will be rendered as objects. Or, if you are watching an action movie with a lot of explosions or cars racing through the streets and want to hear the actors' dialogue more clearly, you will be able to adjust the dialogue.

S&V: So there are no prescribed speaker configurations or number of audio channels.

DC: While DTS:X doesn't dictate any specific speaker layout, inclusion of height speakers will best replicate the immersive experience. The beauty of DTS:X is that it is fully capable of rendering to any and all speaker layouts, including up-firing speakers, but these by no means are required. Each manufacturer's implementation will ultimately determine how much flexibility is available in the system.

S&V: So DTS has no recommended speaker configurations or guidelines for where to place speakers for an optimum “immersive experience?”

DC: The ideal surround or immersive speaker layout has been traditionally hard to implement. DTS:X doesn't

dictate a specific speaker layout because every room is different, from its shape to its furniture setup, etc. One of the principle benefits of DTS:X is the ability to render audio perfectly across any type of speaker layout and to any number of speakers. So, if your left rear speaker is at a slightly different angle from the sweet spot than the right rear speaker due to the actual room design, seamless panning between speakers will allow accurate placement of sounds in the listening environment. By having isolated objects with 3D metadata, DTS:X provides 3D rendering capabilities in the decoder, which accurately places objects into the speaker layout that is optimized for your home setup. The inclusion of height speakers will best replicate the full immersive experience. We recognize that for most people, adding more speakers is impractical, and future DTS technologies will address this.

S&V: What will be the primary source(s) of DTS:X-enabled content for the home, and when will it be available?

DC: DTS:X content for the home can originate from any immersive mix on a variety of delivery systems, from Blu-ray Disc to streaming. According to Nielsen, DTS had a 93 percent market share of the top 100 Blu-ray titles in 2014, and we expect this trend to continue into the next generation of Blu-ray with DTS:X

content. DTS:X is backward-compatible. It builds upon the existing DTS-HD Master Audio decoder to provide backward-compatibility with existing DTS bitstreams and speaker layouts. So in short, all features of DTS-HD Master Audio are supported, and the sound will be terrific.

S&V: How many A/V brands have committed to DTS:X?

DC: AVR manufacturers representing almost 90 percent of the market will be launching DTS:X-enabled products beginning this summer. The exact release dates will be determined by each manufacturer. *[Editor's Note: See the April 9 news report on soundandvision.com for specifics from several “confirmed AVR partners.”]*

S&V: The announcement listed only A/V receivers. Will there be DTS:X-enabled speakers as well? Also, we assume Atmos-enabled models now on the market will work in rooms where in-ceiling speakers are not wanted?

DC: The first consumer products to feature DTS:X will be AVRs. DTS:X content will work with any speaker brand, which gives the choice to consumers to select the hardware that they want, including up-firing speakers.—Bob Ankosko

An extended version of this interview appears on soundandvision.com.

● Dave Casey



This Just In...

By Mark Fleischmann

Dolby Atmos Comes to Tablets

via Lenovo's Tab 2 A10 (\$199) and Tab 2 A8 (\$129), with 10- and 8-inch screens and Android OS. The surround effects work with any headphones...



TiVo's Network Comedy Collection is a new DVR feature that "curates" and automatically records comedy programming from CBS, NBC, ABC, and Fox. It may prove especially useful to users of the Roamio broadcast tuner-based DVR, though it works with any TiVo model...

HBO Now, the new \$15/month streaming service, has launched with the season five premiere of *Game of Thrones*. Cable operators have been responding by offering their version of HBO at reduced prices or bundled with other products...

Xbox One's First News App is ABC News. It offers up to five streams with morning, evening, and weekend editions...

Hulu's Got CSI, the first such deal for the 15-season CBS series. The first 14 seasons are now available for streaming...

Local NBC Stations

are now available on the network's TV Everywhere app. You'll need a cable, satellite, or telco TV subscription to access your local affiliate on computer, tablet, or smartphone...

If You Like LG's Curved TV,

you may also like the LG G Flex2 smartphone, available from Sprint. It includes a 6-inch P-OLED screen, octa-core processor, 13-megapixel camera, improved optical image stabilization, self-healing anti-scratch coating on back, and a battery that charges from 0 to 50 percent in 40 minutes...

Led Zeppelin Streaming

started as a Spotify exclusive but has expanded to Rdio, Beats Music, Google Play Music, Xbox Music, Deezer, and others. Tidal is the first streaming service to stream Zep in a lossless format...

The Technics Tracks

High-Res Download Store offers British and German citizens tens of thousands of tracks in 24/192, hundreds of thousands of 24-bit tracks at other sampling rates, and CD-quality tracks as well. Custom-built by 7digital, the store is part of the re-emergence of the Technics audio brand...



DTS Headphone:X

is being built into smartphones for the Chinese market. No word on when it's coming to U.S. phones...

Unit Shipments of Soundbars

rose 37 percent in 2014, with revenue up 31 percent, and the greatest growth in the \$300-to-\$399 range. Eighty-three percent of models sold had audio streaming, 55 percent had external subs, and HDMI-equipped units were at 32 percent and rising...

Soundtrack LPs

to be reissued by Universal include *Animal House*, *Beetlejuice*, *Boogie Nights*, *Clueless*, *Do the Right Thing*, *E.T.*, *The Godfather*, *Jaws*, *Juice*, *Rocky*, *School Daze*, *Silence of the Lambs*, and Blaxploitation classics such as Willie Hutch's *The Mack*, J.J. Johnson's *Willie Dynamite*, and Marvin Gaye's *Trouble Man*...



Connected Audio Products

will skyrocket from 1.5 million units shipped in 2010 to 66 million in 2018, says an IHS Technology forecast. That includes wireless speakers, soundbars, and A/V receivers, though the drivers are actually tablets and smartphones...

Sony's A/V Division

has been spun off into a wholly owned subsidiary with a greater focus on profit. A similar move has enabled the TV division to turn a profit for the first time in a decade...

Sony's Retail Strategy

is shifting from Sony Stores, with 8 out of 10 closing, to Sony Experience in-store shops, with 100 being added to the existing 400. Sony was the 20th largest U.S. consumer electronics retailer for a decade...

No HDTV for You,

customers of small cable operators. The FCC has extended their HD carriage exemption to 2018...

Pay-TV Companies

lost 125,000 net video subscribers in 2014, though

the pain was felt entirely by cable operators. They lost 1.2 million subscribers, while satellite subscriptions were up 20,000, and telco TV gained more than a million...

ISPs Added Three Million

U.S. subscribers in 2014. Cable operators got 89 percent of those new bodies, up from 82 percent in 2013...

Verizon Has Committed

200 hours of original content per year for its forthcoming mobile streaming service. "It's increasingly clear that 'mobile first' is the way millennials are consuming all kinds of content," said an exec...

The Weather Channel

was suddenly dropped by FiOS TV in favor of Verizon's AccuWeather Network with associated apps and widgets. The Weather Channel pointedly noted that its live coverage of harsh winter weather, much of it within the FiOS footprint, made it the only major cable network to grow in February...

Handson



RATING

Riva Turbo X Bluetooth Speaker

Performance ★★★★★

Features ★★★★★

Build Quality ★★★★★

Value ★★★★★

Riva Turbo X Bluetooth Speaker

By Lauren Dragan

Small Size, Masterful Sound

PRICE \$350

THERE'S A MULTITUDE OF portable Bluetooth speakers on the market today. Every form of novelty is covered: They're splash-proof, they have disco light displays, some literally dance. Standing out in a field of hundreds takes a little something extra that's truly special. How novel is it, then, when a small Bluetooth speaker's claim to fame is that it actually sounds fantastic? Enter the Riva Turbo X, a seven-driver, 45-watt (RMS) little dynamo that is smaller than a loaf of bread and yet easily fills a medium-sized living room with high-quality sound.

The Turbo X's array includes three 2.4-inch drivers and four flat-piston passive bass radiators (two each on the front and rear), which together are remarkable at reproducing crisp high frequencies, lush mids, and even deeper low-end frequencies than what you'd expect from a speaker that measures about 3.5 x 4 x 9 inches. Along with a Bluetooth input capable of aptX sound quality (with compatible sources), there's a 3.5mm analog stereo input. The Turbo X also takes calls with its built-in microphone. There's a USB port for powering your phone, and the lithium ion battery is said to provide 26 hours of

AT A GLANCE

+ Plus

- Easy setup
- Intuitive controls
- Portable footprint but big sound

- Minus

- A little pricey compared with competition its size
- Even with phono mode, vinyl may not be loud enough at line level

play time (at 75 dB volume) when fully charged.

Build quality is exceptional for a portable Bluetooth speaker, with a sturdy metal grille that wraps fully around the speaker, and high-gloss top and bottom plates in either white or black. Touch-sensitive buttons across the top control power, volume up/down, and pairing, and activate either (or both) of two specialized sound modes called Trillium Surround and Turbo (more on these later). A proximity sensor backlights the controls when you wave your hand over the top, and there are audible cues when you press the buttons, including a woman with a British accent who tells you when "Turbo is paired" and a revving-engine effect when you turn on the

Turbo mode. For remote operation from your paired device, Riva's Ground Control app for iOS or Android controls volume, power, and track selection, as well as the sound modes, and also indicates remaining battery power.

As if all this wasn't enough, the Turbo X has one more little special feature. There's a phono mode that helps to boost the gain of the line input for use with turntables. It's somewhat of an Easter egg; activating it requires the aux 3.5mm input jack to be filled and the + and - volume buttons to be depressed simultaneously for three seconds. Keep in mind you might still require a phono preamp with some cartridges.

The Turbo X is said to be weather resistant; one of the three rubber pads on its bottom cleverly pops out to serve as a splash cover for the input jacks. Riva makes a padded custom travel bag to protect the speaker. It's a \$30 option.

As with any speaker, placement in your listening

environment is key. Not surprisingly, Riva suggests a corner placement (which best reinforces bass frequencies) as optimal, 3 to 6 inches from a wall as second choice, and open air as a good option. I tried all three positions in my living room and also took the speaker to other rooms to see how it fared.

Overall, the Turbo X held its own in each location, and my results were about as I expected. A

THE VERDICT

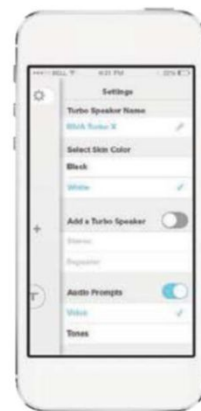
Portable enough for on-the-go listening, the Riva Turbo X is a little more expensive than most, but it's worth the money for folks who want a small speaker without sacrificing sound quality.

smaller bedroom was where it sounded the best; away from walls on a patio table caused a loss in both warmth and deeper low frequencies. To get enough volume for larger rooms or outdoors, you need to pretty much crank the volume control all the way up. (I found 9 out of 10 on the apps volume scale to be enough.)

The Trillium Surround sound mode is made for creating a sense of space when you're watching movies, and it depends upon the scene you're viewing as to whether or not there's a quantifiable difference. It seems to help flesh out larger-scale scenes, such as battle sequences and thunderstorms, and it lessens the sense that the soundscape is coming from a single, central speaker. In contrast, scenes consisting of dialogue indoors are left

largely unaffected. Interestingly, I also found that orchestral recordings were well served by Trillium Surround. It's a very slight shift, but the separation effect enhances the concert-hall feel.

The Turbo mode provides a 7-dB boost in total output while simultaneously applying what Riva calls a





"smart bass compressor" to protect the speaker from overexcursion and damage. And yes, the volume control on the app literally goes to 11 (this top volume is only accessible when Turbo is enabled). Generally speaking, I don't care for the typical boosted EQ settings found on speakers like this; most are heavy-handed, and my ears usually prefer the flattest frequency representation possible. However, the overall sonic effect with Turbo feels more like a careful nudging of the bass and treble in just the right frequencies, and I found I actually liked it with certain genres of music. Pop, electronic, and hip-hop get a slight boost in the vocals and bass line, which sounds exciting rather than suffering from a bloated boom and sizzle. On rock, jazz, and acoustic music, however, I found myself reverting to the flat EQ.

Whichever setting you choose, the Riva Turbo X was dexterous with all genres of music I threw at it. At high volumes, the speaker rarely became distorted. The only time I heard any sort of anomaly was when I enabled Turbo, cranked the volume to the highest peak of 11, and listened to hip-hop or pop. The treble started to sound rough around the edges, and the bass began to waver in volume, as though the speaker was trying to keep from damaging itself (probably that protection circuit kicking in). That said, in most environments, the Turbo X didn't need to be pushed to these limits to be comfortably audible.

With so much competition, the Turbo X's \$350 MSRP may seem pricey, but in this instance, you really get what you pay for. If you need portable, splash-resistant, great sound, the Riva Turbo X is worth every penny.

SPECS

2.4 in bass radiator (4); 2.4 in full-range driver (3) • **Inputs:** Bluetooth (SBC, AAC, aptX), 3.5 mm analog (1) • **Dimensions (WxHxD, inches):** 3.5 x 4.1 x 9.1 • **Weight (Pounds):** 3

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JOHN SCIACCA

Dolby Atmos Continues to Impress



A lot has been written over the past few months about Dolby's new home theater surround format, Atmos. It was certainly the buzz of this past CEDIA Expo, with virtually every receiver manufacturer and many speaker companies showing their take on Atmos-capable systems, both with in-ceiling and Atmos-enabled module speakers.

One of the perks of working at a custom installation firm with a showroom is having a playground to install and experience the latest technologies firsthand before installing them into someone's home. Our showroom's main demo theater offered the perfect Atmos test bed with dimensions of roughly 17 x 24 feet, with a 10-foot-high drop tile ceiling that allowed for positioning of all the speakers perfectly to Dolby's recommendations.

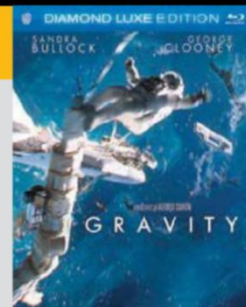
We made the Atmos upgrade this past November to include Marantz's new AV7702 Atmos-equipped preamp along with adding a new five-channel Marantz amplifier to go along with our existing seven-channel amp. (Having 12 total amp channels means we still have one free channel available if Auro—a competing 3D sound format that includes a Voice of God channel placed directly over the listeners—should catch on.) Completing the Atmos install were four new Definitive Technology DI-series in-ceiling speakers voiced to match our existing 7.1-channel Definitive Technology floorstanding speakers and bringing the demo room to a full 7.1.4 Atmos system.

Over the past four months, I've had many opportunities to demonstrate and listen to Dolby Atmos material, and I've watched virtually every Blu-ray Disc released with Atmos audio so far. While hundreds of Atmos-encoded films have been released theatrically, the Blu-ray roll-out has been...slow. As I write this, there are only nine titles including *Transformers: Age of Extinction*, *Teenage Mutant Ninja Turtles*, *Step Up All In*, *The Expendables 3*, *John Wick*, *On Any Sunday: The Next Chapter*, *The Hunger Games: Mockingjay—Part 1*, *Unbroken*, and *Gravity*.

Beyond Atmos Blu-rays, I've also watched a good bit of TV and

movies, as well as listened to music with the Marantz's Atmos renderer "upsampling" the non-encoded content to the in-ceiling speakers. What continues to impress me is the precise localization of sounds—called audio objects in Atmos-speak—as they travel around the room. The Atmos renderer seems to do a far better job of moving sounds around the room, letting you precisely track and locate sounds as they relate to the onscreen action.

While audio mixers are showing some restraint with what is mixed up to the ceiling speakers—mainly reserving them for big action scenes or subtle atmospherics to create ambient space—those overhead speakers do a terrific job of immersing you in the audio and are used aggressively with a film's music score. The Atmos renderer also does a terrific job creating ambience from non-Atmos-encoded titles without impacting dialogue clarity or sounding gimmicky. I imagine most people will leave



Atmos is coming, and it's the future of home theater surround.

the processing on for much of their listening as they do with Dolby Pro Logic II now on stereo content.

The best, most innovative and immersive Atmos mix I've heard to date is from Warner Brothers' re-released Diamond Luxe Blu-ray edition of *Gravity* (see our review on page 68). For a movie that spends most of its time in the noiseless vacuum of space, *Gravity* shows off the full potential of Atmos and is a reference home theater demo disc in every way. The creative and aggressive mix uses the ceiling speakers extensively, doing a terrific job of floating and moving voices around the listener and shifting music and effects through all four in-ceiling speakers, matching the disorienting effect of floating out in space.

Much like the slow roll-out of Dolby Digital-encoded Laserdiscs back in the '90s, Atmos is coming, and it is the future of home theater surround. And the future sounds awesome.

Handson

Koss Pro4S Headphone

By Steve Guttenberg

A Classic Refined

PRICE \$150

KOSS WAS FOUNDED IN 1958, SO it's as old-school American hi-fi as you can get, and I'd bet lots of older audiophiles have fond memories of their Pro4AA headphones from back in the day. Koss still makes that headphone, and sound-wise, it's about as subtle as a 1970 Chevelle SS 396 muscle car. As for this new Pro4S, it's closer to a new Camaro—the sound is far more refined. The sharply sculpted, cast-aluminum ear cups are the first clues; the handsome design has a contemporary look and feel. The sound balance was just a tad warm,

AT A GLANCE

+ Plus

- Big on comfort
- Lifetime warranty
- Timbrally rich

- Minus

- Lacks mic and phone controls

but the Pro4S wasn't lacking in resolution as I played familiar tunes. The sound was right on the money. Not only did my audiophile tracks from Reference Recordings, MA Recordings, and Chesky sound open and clear, the

harshes, most overcompressed downloads didn't tear my ears off. The Pro4S lets the music speak for itself.

The sound of each Koss headphone model is tuned by ear by President and CEO Michael J. Koss, along with members of his family, friends, and the company's engineers. Their working method is right on target. The Porta Pro on-ear headphone that was introduced in 1984 is one of Koss' most iconic designs, and it's still hugely popular. Long before the Porta Pro debuted, the Pro4AA headphones set the standard for full-size Koss headphones. Few other headphones endure the way Koss designs do.

Back to the Pro4S, it features Koss's "D-profile" ear pads, first seen on Koss headphones in the 1970s. The "D" shape conforms to the contours of the ear better than more common round or oval cushions. The Pro4S is a closed-back design, and it does a decent job blocking external noise, while still managing to sound pretty open and spacious. The user-replaceable 4.5-foot coiled headphone cable fits with the "pro" heritage. The hinged headband allows the Pro4S to fold into a small bundle. The metal headband is cushioned by soft foam wrapped in breathable mesh, so comfort levels are decent. You also get a sturdy carry case.

Next, I started comparing the Pro4S with my go-to recommendation for full-size headphones in this price class, the Audio-Technica ATH M50x. First thing, the M50x has fuller but flabbier bass than the Pro4S' generous low end. Antonio Sanchez's hard-hitting drum solos from the *Birdman* soundtrack album sounded a little canned and

RATING

Koss Pro4S Headphone

Performance ★★★★★

Build Quality ★★★★★

Comfort ★★★★★

Value ★★★★★

closed-in over the M50x, and far more open over the Pro4S. Vocals were more naturally balanced over the Pro4S. Later, I popped on a pair of Sennheiser Urbanite on-ear headphones, which sounded darker and less transparent than the Pro4S. The Urbanite lacks the Pro4S' refinement.

The Pro4S is easy to drive, so I spent hours listening with my iPod classic, but this headphone benefited from partnering with amps like my Schiit Audio Asgard 2 (\$249). That combo generated more and better-defined low end; the Pro4S' prodigious bass output caught me by surprise. There was lots of it, without shortchanging definition.

Koss' Limited Lifetime warranty policy (for the original owner)

THE VERDICT

The Koss Pro4s doesn't sound like your daddy's Koss, not by a long shot. It's the best new Koss in ages.

started 30 years ago, so anyone who bought, say, a Pro4AA or Porta Pro back then may have worn a few sets of headphones, but can *still* have their broken headphone repaired or replaced by Koss. That level of customer service is rare for any consumer product, but rarer still for truly affordable products like Koss headphones. To make a warranty claim, all you have to do is ship the headphone back to Koss with a check for \$9 to cover return shipping. If the model is no longer made, Koss will replace the headphone with an equivalent model. That's extraordinary.

The Koss Pro4S departs from the company's signature sound; it's more transparent and open but still very much in the tradition. I like that.

SPECS

Type: Over-the-ear • **Driver Size:** 40mm • **Impedance:** 35 ohms





Bluetooth Blues



I've been checking out the JBL Charge 2 Bluetooth speaker but had doubts regarding its performance

with metal and other heavy types of music. Would the Charge 2's limited bass hinder the sound quality of heavy music in any way?

Abhay Bajpai / via e-mail

Yes, probably. When *Sound & Vision* reviewed the JBL Charge 2, our reviewer Ken C. Pohlmann had this to say: "The Charge 2 actually sounds quite nice. In fact, given its constraints, it's a darn good speaker." He added that the Charge 2's dual passive radiators kicked in "extra doses of grunt." Given Ken's comments, I'd venture that the JBL plays louder and has a fuller sound than many other compact Bluetooth speakers. As a metal fan, though, you need to keep things in perspective. The main benefit to rechargeable Bluetooth speakers like the Charge 2 is portability: You can tote them outdoors and stream Internet radio, podcasts, and music from your phone. But if you want an audio solution capable of reproducing dynamic, bass-heavy types of music like metal, rap, or EDM without the "constraints" Ken alluded to—primarily digital signal processing that prevents the Charge 2's small drivers from distorting when pushed to high volumes—you should instead consider a regular pair of towers or satellite speakers-plus-subwoofer, along with a separate receiver or integrated amp to drive them.

Do Bluetooth speakers' limited bass hinder the sound of heavy music?

I'm interested in hi-res audio but am not sure if my current system can cut it. Here's what I have: Integra A/V 40.3 receiver, GoldenEar Technology Triton 2 speakers, Macbook computer. I'm using iTunes for playback and am running an optical cable from the computer to the Integra. Here's my question: Do I need a DAC to connect the Macbook to the receiver, or can I just continue to use the optical hookup?

Michael Skrzat / via e-mail

You have most everything you need for hi-res audio—minus the right playback software and a

DAC. Much hi-res music available online is in the FLAC format, which isn't supported by iTunes. So if you want to play those files in their native format without having to first convert them to another format like WAV or AIFF that iTunes does support, you'll need to invest in media playback software that's both Mac- and FLAC-friendly. Popular free software includes Vox and VLC. Paid software includes JRiver and Fidelia. Other options include Audirvana, BitPerfect, and PureMusic, all of which operate in Tandem with your iTunes library and automatically switch your Mac's audio setup to the right settings for either high- or standard-res playback.

As for DACs, you'll need one with a USB port, which has become a standard feature on most new models. Along with decoding native high-res FLAC files, another benefit many USB DACs offer is asynchronous data transfer, which enables the timing clock in the DAC to process the audio data instead of the computer's own clock. This feature will improve sound quality not just for high-res FLAC files, but also for regular tracks in WAV, AIFF, and compressed audio formats.

I have read that the electrolytic capacitors in audio equipment can degrade and leak after years of use and that sound quality will suffer as a result. Is this true? I have a few pieces of 25-to-30-year-old gear that still sound fine to me. I've also read that upgrading capacitors can improve sound quality. Is that another myth?

Rob Gerry / via e-mail

It's true that the electrolyte solution in capacitors can dry up or leak out after 20-plus years, particularly if equipment has been sitting idle for a long spell. This can cause component values to drift out of spec, which degrades sound quality. Failed capacitors can also be a source of buzzing noise in aging audio gear. That's why cap replacement is the primary DIY fix you'll want to investigate after scoring a vintage receiver or amp at a garage sale.

Some audio hobbyists might advocate a preemptive cap replacement for 25-to-30-year-old components, but if your gear sounds fine, then the best course of action is probably to leave well enough alone—particularly if your soldering skills aren't up to snuff. As for upgrades, switching out capacitors can have an audible effect, which is why it's one of the many tweaks that audiophiles pursue. But unless you know what you're doing, such a tweak could end up degrading, rather than upgrading, your component's sound.

Are You Atmos-Demo Ready?

You've read all the hype about Dolby's object-based Atmos surround format, but have you heard it for yourself in a home theater environment? If not, you're not alone: In a recent poll on soundandvision.com, 46 percent of respondents said they'd never heard Dolby Atmos. But a visit to your local Magnolia Design Center may cure that. These 60 or so specialized stores-within-a-store found inside select Best Buy outlets are a cut above the standard Magnolia Home Theater sections offered at many of the chain's locations. Seek out a Design Center, and you'll find premium audio brands including McIntosh, B&W, and MartinLogan, shown off in acoustically treated demo rooms for stereo and home theater. You may also find a working Dolby Atmos demo, as did *Sound & Vision* editor-at-large Bob Ankosko when he took a ride to the Design Center in Mt. Laurel, New Jersey. The 5.1.4-channel demo, with four Atmos height channels, utilized Pioneer's SC-89 A/V receiver; that company's Andrew Jones-designed, Atmos-enabled Elite SP-EFS73 mini towers; and four Sonance ceiling speakers that were used instead of the EFS73's top-firing height drivers. You can read Bob's account at soundandvision.com (search for "Get Your Atmos Demo Here" or scroll Audio/Video News from the drop-down menu).—*Rob Sabin*



Logitech Ultimate Ears UE900s Headphone

By Steve Guttenberg

Start Me Up

PRICE \$399

I WAS IN FOR A BIG SURPRISE when I opened the Ultimate Ears UE900s box. The headphone not only comes with a generous selection of sizes and types of ear tips, UE's color-coded, systematic fitting process makes it easier than ever to achieve the perfect fit. This ensures maximum isolation from external noise and the full bass potential of the UE900s.

Instead of a plastic bag with a jumble of tips, the top layer of the UE900s box has nine pair of silicone and Comply ear tips neatly displayed with the size in millimeters clearly indicated, and each tip is mounted on a plastic fitting handle that makes it easy to quickly insert and remove a succession of tips from your ears. These tips are provided to aid in the fitting process, *not* for use on the headphones!

It takes a few minutes to run through the choices for your left *and* right ears. They may vary; the 11.5mm tip that was too small for your right ear might be ideal for the left ear canal. Then the 12.5mm or 13.5mm tip might be perfect for your right ear. Great, now that you've determined which sizes work best, you'll find a complete *second* set of color-coded tips in the bottom of the UE900s box, neatly laid out on a plastic insert. Those are the ones you'll use on the UE900s' earpieces. Ultimate Ears' fitting system makes so much sense, I'm amazed no headphone manufacturer ever offered something like it before!

AT A GLANCE

+ Plus

- UE's tip-fitting system ensures a perfect fit
- User-replaceable cables
- Sweet, nicely detailed sound

- Minus

- Premium pricing

Each UE900s earpiece houses four proprietary balanced armature drivers: two low-frequency, one midrange, and one treble driver. The headphone comes with two sets of 52-inch-long braided cables, one straight one, and one with an Apple compatible mic/remote. The cables and earpieces feature snap-on MMCX connectors and standard 3.5mm plugs. You also get a soft-cloth carry case and a hard-plastic case.

Sound-wise, the UE900s is on the warm side of neutral. There's a little extra bass fullness, which is just the way I like it. More accurate in-ears tend to sound bass-shy when I'm traveling by plane, bus, or train. In those settings, the UE900s sounds

neutral; at home, I'm aware of the bass lift.

The UE900s flattered every music genre, so I was in no hurry to compare it with other headphones. Still, that's part of the job, so I grabbed one of my references, the Hifiman RE600S, and played a few tunes. That one sounded "faster" and more immediate, while the UE900s is softer and more laid-back. The UE900s clobbered the RE600S in terms of bass power and overall dynamics. The UE900s has a rock-'n'-roll heart, whereas the RE600S better resolves subtle textures and details. Back with the UE900s, Eric Clapton's *Unplugged* album was so clear, I could hear his band's instruments filling the studio. I felt like I was in the room with the guys.

Up to this point, I listened with my iPod classic, but I was curious to see how the UE900s would fare with Neil Young's new high-resolution

RATING

Logitech Ultimate Ears UE900s Headphone

Performance ★★★★★
Build Quality ★★★★★
Comfort ★★★★★
Value ★★★★★



THE VERDICT

The Ultimate Ears UE900s look, feel, *and* sound right, they're big on transparency, without shortchanging body and soul.

PonoPlayer, with a set of *balanced* cables on the UE900s. I wasn't expecting to hear much of a difference, but transparency and dynamic impact gains were significant. The PonoPlayer has a standard 3.5mm headphone jack, and a second 3.5mm jack that can be configured to run balanced cables, such as Cardas Clear cables, with the UE900s.

Though it's not cheap at \$399, the UE900s is an audiophile-grade, in-ear design that won't empty your piggy bank. And when you're itching to upgrade, you can pony up for the \$399 PonoPlayer and a set of balanced cables that will take the UE900s' sound to the next level.

SPECS

Type: In-ear • **Drivers:** Balanced armature drivers (4 per earpiece) •

Impedance: 30 ohms •

Sensitivity: 101.2 dB @ 1 kHz, 50 mW





B2 Premium Bluetooth® Speaker. Only \$299.



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Experience award-winning Audioengine® sound, including a hand-built cabinet, Bluetooth® aptX®, a 24-bit DAC, and extended wireless range.



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audioengineusa.com

Finish Options

-  Black ash
-  Walnut
-  Zebrawood



The Last and Greatest Frontier



Many of the age-old audio problems have been solved, or at least beaten into submission. Ever since

Edison recited “Mary had a little lamb,” countless audio engineers have poked and prodded, pulled all-nighters, made minor adjustments, had genius-caliber brainstormers, and generally worked far above their pay grade to lift audio technology to a very high state of the art.

Microphones can capture signals with a flat response and tremendous dynamic range. Similarly, given enough bits, analog-to-digital converters can encode, and digital-to-analog converters can decode, an audio signal with a response and range that far surpasses that of the human ear.

Once the Achilles’ heel of audio, storage is now trivial: 8 terabytes of storage costs \$300 at Best Buy. Amplifiers can boost volume levels while adding only the tiniest amounts of distortion at even the mightiest levels. Good loudspeakers,

A phone’s sound quality is its weakest link.

albeit with a bit of coloration, can reproduce signals with great aplomb.

These days, audio is good, really good. In the interests of keeping themselves employed, golden ears can kvetch convincingly about the fidelity of high-end systems. But truth be told, the recording and production decisions in specific recordings provide a lot more room for grumbling than does the equipment that reproduces them.

But there remains a last frontier, an audio problem that seems insurmountably difficult. The last problem concerns loudspeakers. No, not the cherry-covered towers in your home theater.

The tiny speakers in your phone.

They are called microspeakers, and



with good reason. A typical specimen might occupy the same area as a dime. The idea that such a small transducer could make any identifiable sound at all, let alone provide high fidelity, seems outrageous. Yet some of the smartest audio engineers on the planet are tackling that very problem. They want to develop microspeakers that not only sound good, but sound great.

Loudspeakers have a tough job. A successful speaker must move the air in your room in the same way, for example, as a hundred musicians in a symphony orchestra move the air in a concert hall. Now imagine doing that with the built-in microspeaker in a phone. Ambitious, to say the least. The speaker is among the most antediluvian components in the phone. Its basic design predates even the plastic used to make the phone’s case. Game changers like low-bitrate coding and lossless data compression upended the way we viewed the storage and transmission of audio signals. High-fidelity microspeakers will need the same magnitude of game changing.

The engineers working on microspeaker sound are just beginning to wrap their minds around the problem. Unlike today’s crude parts, a high-fidelity microspeaker will require new kinds of expertise in speaker miniaturization and manufacture. Even so, the tiny diaphragm will still be working against the laws of physics. The only way to overcome that will be through the leverage of magnificently complex digital signal processing. Countless lines of code and blazing-fast computation will analyze the music waveform and precondition it to counterbalance the severe nonlinearities and limitations of the transducer. At the output, when the data causes the microspeaker to disturb the air around the phone, it will sound awesome.

A phone is truly a modern marvel. A few years ago, few would have believed that such an amazing device could exist. Compared with all the high-tech capabilities of a phone, the phone’s sound quality is probably its weakest link. And yet I look forward to the day when I lay my phone on the table and hit the play button and the high-fidelity sound of a symphony orchestra fills my room. Can that possibly ever happen? Well, they’re working on it.

Sir George Endorses Headphones

How often do you get a chance to buy high-end earbuds and make the world a better place at the same time? The Sir George Martin Signature Custom Earphones are endorsed by the legendary producer of the Beatles and will benefit a hearing-related charity. These very special in-ear monitors feature technology from Meridian, Britain’s leading digital audio company; Advanced Communication Solutions, which specializes in hearing conservation products; and Asprey, the jeweler and luxury goods house. Only 1,000 pairs will be made. The design features three drivers per side and silver-plated copper wire. The package includes a Meridian Explorer2 USB DAC and an HDM-Pro hearing-dose management unit, which keeps output within EU-specified limits. The price is £2,250 including a £250 donation to the nonprofit group Action on Hearing Loss. For more details, see accsignatureseries.com.—MF



Would You Subscribe to SNL?

Comcast’s NBCUniversal is preparing to build a video streaming service around its prestigious comedy franchises, including *Saturday Night Live* and *The Tonight Show with Jimmy Fallon*. Yes, you’ll still be able to watch the shows for free via antenna or basic cable—but those media are waning while streaming gains strength, and the new service is expected to attract cord-cutters. The more desirable shows may have a window of exclusivity on NBC’s streaming service before heading off to Google’s YouTube, which attracts millions of views with *Tonight Show* clips but hasn’t come to a revenue-sharing agreement with the network. The service would cost \$2.50 to \$3 per month and would feature original programming as well as full episodes of existing shows.—MF



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The OPPO PM-3 combines true audiophile performance, elegant styling, noise isolation and portability into a pair of sleek lightweight Planar Magnetic headphones.

OPPO Digital, Inc. | www.oppodigital.com | Mountain View, CA

Premium Cable Cuts the Cord



Arguably the leading premium channel for movies and original series, HBO

adds \$23.24 to my monthly cable bill. I get six HBO channels, though they mostly repeat the same shows ad nauseam. Linear redundancy has been a waste of cable bandwidth since the DVR landed, but it's become even more outmoded in the age of high-def broadband and on-demand viewing.

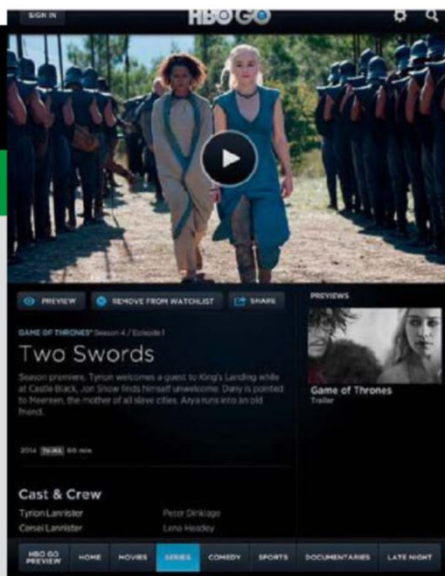
Refusing to pony up for unbreakable packages to get the few programs they'd watch, younger viewers have been cutting the cord on cable TV. They've been voting with their eyeballs, turning away from TVs in favor of computer and mobile screens.

This generational shift in the way Americans consume "TV" hasn't been lost on HBO. HBO Go enables you to watch virtually anything available on HBO whenever you want as long as you subscribe to HBO through your cable operator. There's a back catalog too, ranging

There's a generational shift in the way Americans consume TV.

from all episodes of *Silicon Valley* to *The Sopranos*. The app is available for iOS and Android users. HBO Go content can also be streamed to your computer, certain brands of smart TVs, and to various connected devices including Apple TV, Roku, PlayStation, and Xbox.

The new alternative to HBO Go, and the real story here, is HBO Now. The latter delivers the identical on-demand content but without the prerequisite to subscribe to HBO through a cable or satellite middleman. All you need is a high-speed Internet connection. To start, the stand-alone premium service can be purchased directly at the iTunes App Store for \$14.99 a month. Besides using the HBO Now app on an iPhone, iPad, or iPod touch, you'll be able to stream programs on a computer. For now, you'll need an Apple



TV to watch HBO Now on a TV, though that limitation is likely to change.

Both HBO Go and HBO Now are a binge-watcher's dream, although new episodes of an original series are spaced out weekly to match HBO's cable premiers. The same kowtowing to cable goes for movies premiering on HBO. To watch *A Million Ways to Die in the West* on my iPad, I had to wait until just after the start of its Saturday night premiere on HBO.

A mobile screen and network A/V receiver deployed in the same Wi-Fi-enabled home can be disconcerting. My wife was on the couch watching the Food Network with the TV's internal speakers while I was in another room fingering the HBO Go interface on my iPad. Touching the Airplay icon brought up the Pioneer VSX-823, and selecting it automatically muted the audio on my iPad and launched the receiver. *Game of Thrones* came pouring out of the external speakers, obliterating the chatter from *Chopped*. Isn't it great that even on a small screen, HBO affords you the ability to reach for big sound?

With HBO Go and HBO Now, a bookmark is inserted automatically where you leave off on each show. There's closed captioning, 30-second replay that takes 6 seconds to resume play, and a scrub bar that takes you to any point in the program. The app lets you post to Facebook or Twitter, contextually filling in the comment field for you (e.g., "I'm watching Sarah Silverman on HBO Go.") Programs are letterboxed by default, or you can view them full screen with cropping.

At a time when so much Internet video is supported by commercials you can't skip, HBO continues to remind us why premium content counts. Options for cord-cutters are growing. As HBO puts distance between itself and its cable partners, viewers should rejoice at being able to get superior programming and the flexibility of how to watch it.

How Will ATSC 3.0 Audio Talk to Your System?

If the advent of Dolby Atmos in home surround gear has pricked up your ears, you may be interested to hear that object-oriented surround will also be part of the forthcoming ATSC 3.0 broadcast TV standard. That doesn't mean Atmos itself is hitting the airwaves. Instead, other surround encoding systems will be tested this summer from Dolby, DTS, and a consortium of other companies.

All support High-Order Ambisonics, a "scene-based" format that maps encoded objects onto whatever speakers are available, as well as speaker layouts up to 7.1.4 (an established Atmos configuration with four height channels) and 22.2 (the surround standard of Japan's Super Hi-Vision, adding numerous height and center channels).

Dolby's AC-4 would travel from TV to A/V receiver through the HDMI Audio Return Channel. Initially the TV would decode the AC-4 signal to a format acceptable to the receiver, presumably Dolby Atmos. In later generations, the AVR would incorporate AC-4 decoding, and the TV would pass a bit-stream for decoding in the AVR. AC-4 supports 5.1 surround and stereo as well as object-oriented surround and requires only half the bandwidth of the already pretty efficient Dolby Digital Plus.

DTS:X, from Dolby's arch-rival, can be decoded by a TV or set top box, passed via HDMI output, or transcoded to DTS 5.1 and passed via HDMI ARC or digital optical connection. DTS says object-oriented audio can be rendered and played back on 5.1- or 2-channel systems and the signals could potentially be read by the DTS:X decoders in new upcoming AVRs. DTS also proposed its Headphone:X technology for headphone consumption of ATSC surround signals.

The third proposed standard is MPEG-H from Fraunhofer, Technicolor, and Qualcomm. It operates in either a scene-based or channel-based manner at bitrates of 96-256 kbps for "good to excellent quality" or 384 kbps for "immersive reproduction." MPEG-H would work with loudspeakers, soundbars, tablets, or headphones.—MF





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MIKE METTLER

Brian Wilson Continues to Create Sonically Beautiful Pocket Symphonies



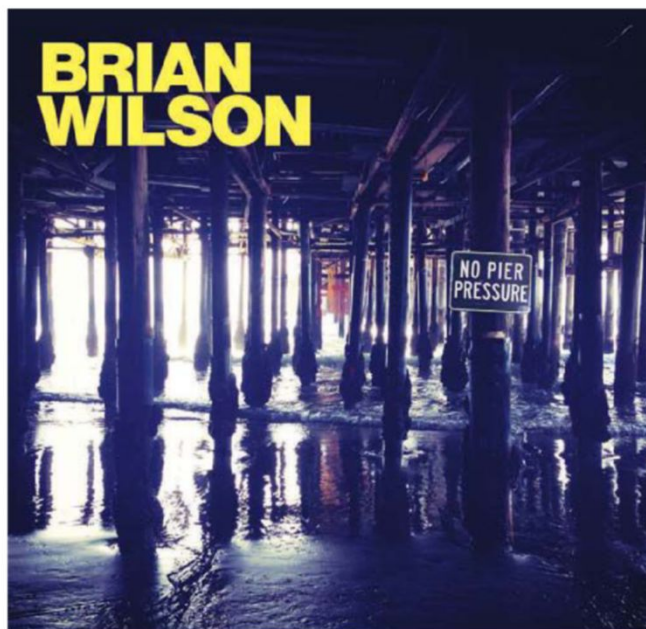
How does he do it?
How does the eternal Beach Boy

Brian Wilson keep composing all-new harmonically gorgeous and sonically seductive pocket symphonies (as he likes to call them), 50-plus years into his career? The answer, he says, is quite simple: "I know in my head—in my brain—how to do it." Wilson's marvelous brain has dreamt up scores of timeless classics, such as the instantly hummable sing-alongs "Surfin' U.S.A.," "Fun, Fun, Fun," "Wouldn't It Be Nice," "California Girls," and "Love and Mercy" (to name but a few), and he's just added 16 more gems to his storied canon on the Deluxe Edition of his 11th solo album, *No Pier Pressure* (Capitol). The angelic choral joy of "This Beautiful Day," the pop confection perfection of "Saturday Night"—which features Wilson blissfully trading lead vocals with Nate Ruess of fun.—and the jaunty nautical shanty "Sail Away," the latter a reunion with onetime Beach Boys band mates Al Jardine and Blondie Chaplin, all reinforce the fact Wilson remains very much in touch with his beautiful muse.

Wilson, 73, and I discussed his production benchmarks, the difference between inspiration and influence, and what he thinks sounds the best on radio. God only knows—when it comes to six decades and counting of creating the soundtrack for an endless summer, Wilson continues to put forth nothing but good vibrations.



Photo by Brian Bowen Smith



MM: When did you start "knowing" you could compose all of those magical harmonies inside your head?

BW: It started when I was 19, and I got better and better as the years went by. (chuckles)

MM: What got you going creatively at that early age—other sounds you heard, other people's music?

BW: Well, Phil Spector's records helped me learn a lot about producing. Chuck Berry's music taught me a lot about writing rock 'n' roll songs. And I learned from many different sources about how to make harmonies.

MM: You've always been good at capturing a particular sense of space in your recordings. From the very beginning of "This Beautiful Day," it feels like I'm right there in the room with you, bobbing my head along as each line and layer unfolds.

BW: My goal is to try to make the listener know and feel what I sound like, whether he likes it or

doesn't like it. Some of these songs have a sentimental meaning to them, but that's how I felt as a songwriter. People are going to love the feeling they'll get with "Sail Away."

MM: "Sail Away" has a common thread with the way you make people feel in songs like "Surfin' Safari" (1962), "Surf's Up" (1971), and "Sail On, Sailor" (1973).

BW: Exactly! I like to make the album sound like it's current—and, at the same time, reverse back to the '60s.

MM: Do you have favorite recordings of yours from the '60s that you still consider personal benchmarks?

BW: Yeah! "California Girls" and "Surfer Girl."

MM: I'd have to agree with you there. In the early '60s, mono was important to you as a composer and a listener. Any specific mono recordings from other artists that stood out to you the most?

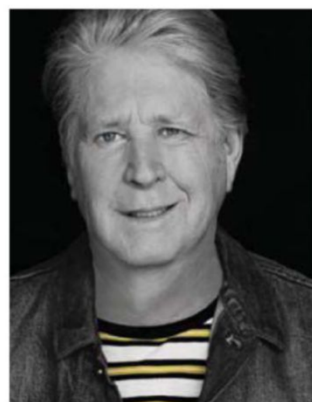


Photo by Brian Bowen Smith

BW: Mono was very important. I only have one good ear, so I only hear mono anyway. I like what Phil Spector did in mono, and a lot of different artists, like The Beatles. The Beatles inspired me. They didn't influence me, but *Rubber Soul* (1965) inspired me to make a great album.

MM: Paul McCartney has often said he felt like The Beatles had to compete with what you did on *Pet Sounds* (1966), which must be a great compliment.

BW: It was a very good compliment. But we were so busy making our own records that we didn't really know what other people were doing when they were making theirs.

MM: Growing up, there was something special about hearing The Beach Boys on the radio. You sure knew how to compose songs that sounded good on both AM and FM.

BW: Right—but mostly FM. "Good Vibrations," that was like a pocket symphony. It was a very artistic record, and it had a great message about good vibrations. It was fantastic.

An extended version of the Mettler-Wilson No Pier Pressure Q&A appears in The S&V Interview blog on soundandvision.com.

CD

LABEL: Capitol

AUDIO FORMAT: 44.1-kHz/16-bit PCM Stereo

NUMBER OF TRACKS: 16

LENGTH: 50:03

PRODUCERS: Brian Wilson and Joe Thomas

ENGINEER: Wesley Seidman

PERFORMANCE ★★★★★
SOUND ★★★★★

THIS IS WHAT GREAT SOUND LOOKS LIKE

And so is this.

Premium installed audio has a new signature.
See the whole line at episodespeakers.com.

 episode
signature



NewGear

THIS MONTH'S HOT STUFF...

↑ Optoma NuForce DDA120 Integrated Digital Amp

For music lovers who want to keep things simple and skip the complexity of an A/V receiver-based setup, the low-profile DDA120 amp is rated to deliver 2x50 watts into 8 ohms (75 watts into 4 ohms) and offers an analog RCA input plus four digital inputs: one USB, two coaxial, and two optical. The amp's "direct digital" architecture uses a 176.4-kHz input sample rate for "smoother, more natural reproduction" and keeps signals in the digital domain right up to the speaker outputs.

Wishing for Wireless: Adding Bluetooth streaming capability—with aptX support—is a simple matter of plugging the included BTR1 receiver into an expansion slot on the back of the amp. Available in black or silver; remote included. **Price:** \$699

Optoma • (888) 289-6786 • optomausa.com

✦ Metra Velox Ultra HD HDMI Cables

The Velox line of patent-pending HDMI cables are designed to shuttle HD signals up to 10 meters (33 feet). Available in nine lengths, the cables are certified by DPL Laboratories to deliver signals at 18 Gbps and designed to eliminate data errors to ensure robust signal transmission and reliable HDCP handshakes between

devices. **What Goes Where:** A clever coding system makes it easy to mark cables with removable tabs that come in five colors so you can keep track of your cable runs; six sets of tabs are included. Prices range from \$266 for a 0.5-meter cable to \$656 for a 10-meter cable.

Metra Home Theater Group • (866) 839-9187 • ehdcables.com

✦ Visual Apex ProjectoScreen 144HD Portable Projection Screen

Bring the nostalgia of a drive-in movie theater to your backyard with the ProjectoScreen 144HD. In about the time it takes to pop a bag of popcorn, you'll have the 144-inch matte white screen set up under the stars and ready for some blockbuster action. The screen, which has an actual viewing area of 125 x 71 inches, attaches to a freestanding aluminum frame that can be secured with guide wires and tent stakes (included) if additional stability is needed. **Stowaway:** The whole shebang weighs 36 pounds when it's tucked away in a 48 x 13 x 6-inch canvas bag, and the 0.32mm-thick screen is UV-protected and resists mildew so no worries about storing it in the basement or garage. **Price:** \$259

Visual Apex • (800) 883-7495 • visualapex.com





↑ **Monster SuperStar BackFloat Speaker**

There aren't too many speakers you can take into the shower or drop into the pool while it's streaming "Good Times Roll" from your smartphone. The silicone-encased BackFloat Bluetooth speaker not only floats but is waterproof and shockproof. Better yet, it's small enough to take anywhere, even boating. Not content just listening to music while you're lounging in the pool? The speaker has a fountain mode to spice things up. **Stay Connected:** If your boss calls while you're sipping a margarita, no worries—the BackFloat doubles as a speakerphone (not that we expect you to take the call). Available with neon blue or green accents, it comes with a mesh carry bag and micro USB charging cable. There's even an auxiliary input for those boring landlubber activities. **Price:** \$170
Monster • (877) 800-8989 • monsterproducts.com

✦ **Lenovo Pocket Projector**

Ever wish you could stage an impromptu movie night in your backyard? Lenovo's battery-powered Pocket Projector super-sizes images from any Miracast- or DLNA-enabled Android (v4.3 and up), Windows 8.1, or iOS device. Its hinged design lets you rotate the lens up to 90 degrees while correcting for distortion. Battery life is rated at 2.5 hours per charge, and you can store up to 32 GB worth of favorite movies on a microSD card. **Go Big:** How's a 110-inch image from a projector that weighs less than 3 pounds and fits in the palm of your hand sound? Its "50-lumen high-contrast optical engine" is said to display bright, colorful images. Sure, resolution at 110 inches is only 854 x 480 but what'd you expect? **Price:** \$249

Lenovo • (866) 968-4465 • lenovo.com





Photo courtesy of Elektra Records

Riders on the Audio Storm

The Doors break on through to the other side of 5.1. **By Mike Mettler**



“Let’s swim to the moon, uh-huh. Let’s climb through the tide, penetrate the evening that the city sleeps to hide.” Those opening lines to “Moonlight Drive,” sung a capella by Jim Morrison to Ray Manzarek on Venice Beach in Southern California a full half-century ago in 1965, instantly set the tone for a band that came to define a revolutionary sound that can be conjured just by seeing their name on paper or spo-

ken aloud: The Doors. “Jim and I had the initial conception in the middle of nothing there at the beach in Venice, with the sun setting into the grand Pacific Ocean while we were standing on the end of Western civilization,” Manzarek recounted to me in 2008. (Sadly, he succumbed to bile duct cancer in Rosenheim, Germany in May 2013.) “Jim had great lyrics, and I could play the keyboards, so we both said, ‘Let’s get a rock ‘n’ roll band together.’”



● The Perception box set



And so they did. Enlisting guitarist Robby Krieger and drummer John Densmore, the forward-thinking UCLA film-school graduates merged their mutual passions for cinema and music to create what I like to call the perpetual audio movie. The mysteriously seductive nature of The Doors sound, blue-printed via six core studio albums and their respective 62 songs, has endured six decades of radical change in popular music and will likely continue to imprint listeners for many generations to come. “I love The Doors. They changed the trajectory of my life,” says Jac Holzman, founder of Elektra Records and the man who signed The Doors after seeing them play four consecutive nights as the Whisky a Go Go house band in Los Angeles in 1966. “They had it together. They were incandescent, and they were fueled by each other. They were the best band I ever heard, with songs that went *deeper*—songs that were daring to go places that you didn’t expect, from the weightiness of classic Greek mythology to ‘Hello, I love you, won’t you tell me your name?’” The key, Holzman believes, is how the band and its ace production team—producer Paul A. Rothchild and engineer Bruce Botnick—all pulled together to make sure the integrity of the band’s sound was preserved on record. “We made albums so carefully,” Holzman notes. “I think the attention to the detail and the fussing over getting everything just right and not letting it go out otherwise are some of the reasons The Doors have held up over time. We had it right to begin with.”

Botnick, who has been the band’s chief sonic architect for the past few decades (Rothchild passed away in 1995), very much agrees with Holzman. Right from the initial days of recording the band to 4-track at Sunset Sound Recorders in Hollywood, the audio-quality goal centered on capturing the

essence of how the four Doors played together and interacted in the studio. “We always felt they were a performing band,” Botnick observes. “We weren’t supposed to ‘create’ The Doors in the studio—they were already *The Doors*. Basically, our thing was to be invisible—to be in the back and to document everything they were doing in the best way possible. Robby had his sound, Ray had his sound, John had his sound, and Jim had his sound. We gave them advice and guidance where necessary, but we stayed out of the way and let them shine. The emphasis was getting the performance and then fixing it if necessary. The mixes *evolved*. You had to have enough good sense to leave it alone and let it become what it’s going to become. That’s one good thing Paul and I did—let it be. The adage is, ‘Don’t think; it’s dangerous.’ If you’re thinking too much, you’re not going to let something good come.”

Thanks to the combined efforts of Rothchild and Botnick behind the board, Doors drummer John Densmore saw immediate results. “I was just learning how to record when we were doing the first album [January 1967’s *The Doors*],” he recalls. “In the studio, you tweak the drum sound to make it a little more muffled, and also fatter. You know what ping-ponging is—you combine two tracks, but you lose sound quality. We did that quite a bit on the first album, but we didn’t have to do it as much on the second [September 1967’s *Strange Days*], where we had eight tracks. As technology increased, the overdub capacity was enhanced—but you had to be careful. With 16 and 32 tracks, the trap is, ‘Oh! We’ve got so

many tracks! Let’s put some more of *this* on there! Another tambourine!’ And then you overdo everything. You have to be careful and remember that’s not the goal; it’s the vehicle.”

Botnick’s studio acumen impressed Densmore from the outset. “He made us feel secure,” he says. “He’s a world-class engineer, and he’s really the fifth Door, in a way. He was there when we made them, so those songs are in his blood too. And he’s overseen each new technology that’s come along and made sure we’re on the cutting edge, especially when it comes to surround sound.” (More on The Doors in 5.1 in a bit.)

Guitarist Robby Krieger was also quite pleased with the sound of the band’s studio output. “I’m very happy with the results,” he acknowledges. “But when we heard ourselves on the radio, we never seemed as loud as the other songs. I’d ask, ‘Why is our song always so low coming out of the radio?’ According to Bruce, it was because we had more dynamic range than most bands.”

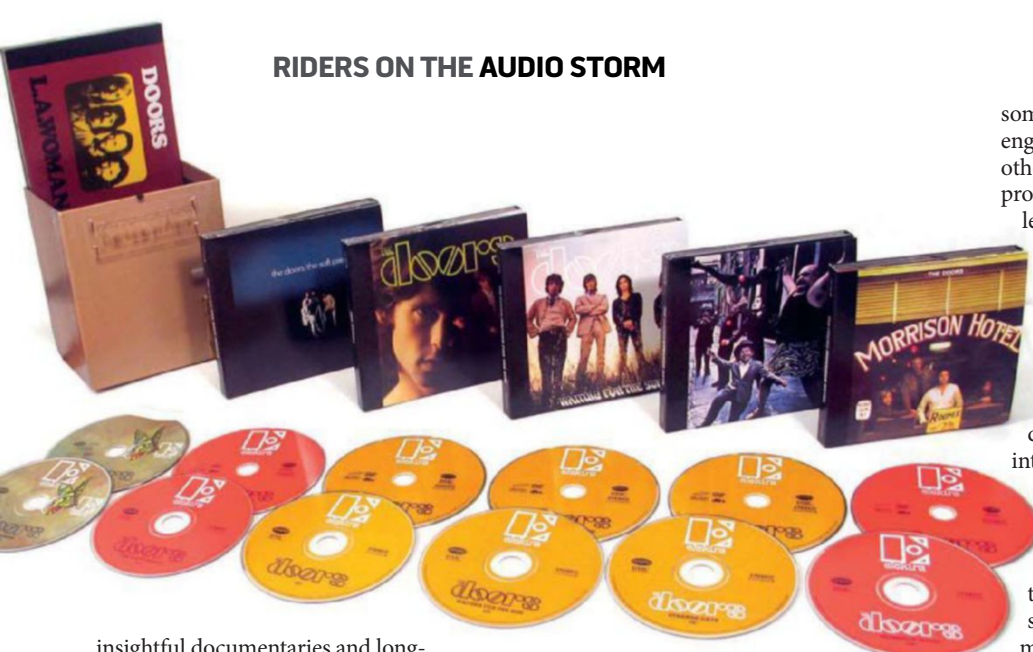
The Software Parade

That wise and wide dynamic range deployment has served the band well as, just like Densmore noted, technology has shifted its shapes in the ensuing decades. The aforementioned core half-dozen studio albums—*The Doors* (1967), *Strange Days* (1967), *Waiting for the Sun* (1968), *The Soft Parade* (1969), *Morrison Hotel* (1970), and *L.A. Woman* (1971)—are all available as 96-kilohertz/24-bit downloads via HDtracks and the PonoMusic Store; three of them (*Doors*, *Strange*, and *Hotel*) are also available in 96/24 from Acoustic Sounds Super HiRez. Rhino/Elektra dropped a seven-platter 180-gram RTI-pressed vinyl box set in 2007 (including a separate disc with the original mono mix of *The Doors*), subsequently offering each LP individually in the following years. In 2012, Analogue Productions, Acoustic Sounds, and Quality Record Pressings joined forces to release the beyond-fabulous limited-edition Doug Sax–remastered *Infinite* vinyl box set at 45 RPM on 200-gram vinyl (along with a concurrent issuing of multichannel SACDs).

And over the past few years, each Record Store Day has been greeted with exclusive new limited-run Doors releases on wax, such as *Weird Scenes Inside the Gold Mine*, *Honor Thy Treaties* (a two-sided 12-inch single overseen by Densmore, featuring the haunting “Ghost Song” from Jim Morrison’s *An American Prayer*), and April 2015’s gem, a mono pressing of *Strange Days*, a mix that’s been out of print since 1967. Meanwhile, EagleVision has brought

● Jac Holzman, founder of Elektra Records





insightful documentaries and long-lost live footage to Blu-ray, including 2013's *R-Evolution* and 2014's *Feast of Friends*. There's also "The Doors: An Immersive Journey" app that's available in the iTunes App Store, produced by Jac Holzman and Robin Hurley. "The app is an alive thing," Holzman explains. "It's a three-dimensional, 360-degree jigsaw puzzle, elegantly put together. We put in all the elements and have all the points of view, and we can keep changing it and updating it. The app is a great opportunity to redefine the band and everything it's about."

And then there's the 5.1 side of the soul kitchen. Overseen and remixed with precision by Botnick, the 2006 *Perception* box set takes those six core albums and brings out the individual character of each of its 62 songs (plus an additional 28 bonus tracks and 12 video clips) on DVD-Audio. "Who wouldn't want to be immersed 360 degrees in The Doors? Who needs drugs, you know?" laughs Densmore. Krieger adds, "Oh yeah, they're pretty cool. You can hear a lot of stuff that's going on. I was there with Bruce in the studio when he mixed them. It was pretty cool to hear stuff back and in all four corners, when you're just used to hearing the two sides. I thought the drums especially came out great." Manzarek believed surround was where it was at. "That's the real wave of the

future—or at least it should be," he said to me in 2008. "We may not change out of rock 'n' roll, but we're gonna change the way we listen to music so that we're operating in 360 degrees of sound. Whatever happens, it's gonna be a very poetic use of aural space. A revolution in music."

That said, as Holzman observes, that revolution has to be true to the intent of the artist. "It depends on the instrumentation, the nature of the band, and the work," he says—and the man very much knows of what he speaks when it comes to 5.1, as Holzman helped author the original DVD-Audio standards, not to mention his involvement in the rise of the laserdisc and CD formats. "I'm not particularly interested in hearing Ray play behind me. What I am interested in is enlarging the proscenium and hearing the air in the room. You can get some of that in stereo, but with surround sound, it's something I want to be more atmospheric than specific. Doing tricks to show off a sound system and all that ping-ponging stuff—that's nonsense. In terms of the fullness of the experience, I think surround sound has value. But it has to be done very carefully, and by somebody who knows what the hell they're doing."

And that somebody is Botnick, who had a very clear philosophy in terms of what to do—and what *not* to do—with The Doors in six channels. "Each song on each album has its own life," he explains. "Instruments are supposed to go where instruments are supposed to go. On all the *Perception* discs, the goal never really was to do too much zooming from front to back. The goal was to have the openness of the surround—left, center, right, and *really* use the center a lot. Most surround discs I hear are mixed for listening only, not film, and they basically avoid the center channel at all costs, because they're so used to listening in stereo, and they don't understand the freedom of the center speaker. I will catch

some heat for saying that," the producer/engineer chuckles. "If there are drums and other things in there, you shouldn't have a problem. If all you're doing is putting just the lead singer in the center, you're in a little bit of trouble."

The Doors are heard at their best in the natural surround evident on songs like "Light My Fire," "The Crystal Ship," "Not to Touch the Earth," and "When the Music's Over"—to name but a few. "Especially on the first album, I used a little diversity to spread Jim's vocal a little bit into the left and right, though, basically, it was still in the center," clarifies Botnick. "To make that album work, the goal for me was to *immerse* people and put you into the room with the band. To do that, I would use the outer space in my studio as an echo chamber. I had five Neumann M50 microphones, positioned as it would be in the listening area, and then used that combination with reverb to give you a sense of natural leakage into the rear so it didn't have a mechanical or digital sound, but more of one that was organically analog."

Some of the more dramatic moments dominate tracks like "Horse Latitudes" (from *Strange Days*) and "The Unknown Soldier" (from *Waiting for the Sun*). "If you listen to 'Horse Latitudes,' you'll hear how I put Jim in the middle of the five speakers and in the middle of the room, and everything else is revolving around it," Botnick points out. "You could get nauseous. It's like Disney's cyclorama [i.e., CircleVision 360°]—if you were standing up and it could move, you would fall over."

"'The Unknown Soldier' is also a good one, with all the marching around the room," Botnick continues. "Anything that cinematic is lots of fun, but you don't want to do it just to do it. If it cinematically meant something and it really enhances the song to that next level, you have to go there. But to do it just to do it is a cheat—and that wouldn't hold up with the philosophy we had all these years, which was to be true to the music and true to the band. It can be confusing, so you have to be careful with how much you do. The idea is to *envelop* people to give them a more immersive experience."

Botnick is no stranger to immersion, having also worked on the soundtracks to over 150 films, including more than 100 with the late composer Jerry Goldsmith. "I like to think cinematically in my head," he says. "You just sort of have a place when you hear the song where it's gotta go, without having anybody telling you where. It just happens. 'Riders on the Storm' [from *L.A. Woman*], without the rain and thunder, is an entirely different animal. Putting the thunder and rain on it, which we got from Jac Holzman's sound-effects projects, gave it that personality—and that was Jim's idea. He's the one who said, 'It would be great to have thunder, rain, and lightning,' and it stuck in my head. I immediately knew what to do with it."

● All four members of The Doors in their heyday.



Botnick hopes there will be more Doors 5.1 releases ahead. "I'd like to see some of the live stuff get into surround," he suggests. "I was very encouraged by the Hollywood Bowl [Live at The Bowl '68, released on Blu-ray in 2012]. It isn't that hard to do; it just means firing up Pro Tools and opening it up into surround. There's a little bit of balancing here and there, and you have to be ready for a change in environment, because the rooms are different. When we did *Absolutely Live* (1970), I had a pair of speakers in the rear for fun while mixing—we didn't know about surround then—and I would put the live room in them. Every time we did a cut from a different show, you'd feel the size of the room change. In the front, you didn't hear



● *Feast of Friends* on Blu-ray

that much, but the rears would change *dramatically*, and that was very cool."

When the Music's Over

The Doors have been able to secure their legend not only due to the mythology that will forever surround vocalist/lyricist/doomed poet Jim Morrison, but because of the inherent sonic value of their recorded output. "They were an unusual band," assesses Holzman. "They were adventuresome, and there was an aura of danger, mostly about Jim and what he was doing. I thought there was a magnetic quality to Jim. There are not that many people who are indelible."

Offers Krieger, "We were four weird guys who just happened to come together at the

right place and right time, and we became something bigger than four people, you know? We multiplied our growth, we didn't just 'add' to it. In fact, I still find most Doors songs are fun to play. I don't think I'll ever get tired of playing them." Concludes Densmore, "They're my musical brothers. I mean, how could we *not* be? We created magic in a garage."

Said magic garage opened the very doors of perception—a name the band gleaned from author Aldous Huxley, itself a callback to a line from poet William Blake: "If the doors of perception were cleansed, every thing would appear to man as it is, infinite." Infinite, profound, immaculate, shamanistic—all terms that define the sonic legacy of The Doors, a band unafraid to break on through to the other side to light a fire for how to best capture the dynamic range of timeless audio excellence. Their music is your special friend, until the end. ♦

Bass Hand Man

Many agree the secret sauce of The Doors' sound resided firmly in the hands of late keyboardist Ray Manzarek—especially his left one, which mainly handled the band's low-end needs. "They were touched by a kind of magic at the beginning," says Elektra Records founder Jac Holzman, "but what most impressed me was Ray Manzarek—the concept of piano bass instead of a bass player. He had such total and independent control, and I was totally enamored by him." Agrees drummer John Densmore, "It's about Ray's left hand being the bass player. Bass players and drummers are brothers cooking up the groove, and if Ray and I hadn't felt the rhythm of Jim [Morrison]'s lyrics the same, The Doors wouldn't have happened. Here's a guy who managed to split his brain into half bass player and half organ player. I really miss him."

Manzarek, who passed away at age 74 in 2013, spoke to me in 2008 about The Doors' ongoing impact, his love of vinyl, and being let down by the CD format. Turn out the light.—MM

MM: I like how The Doors' music is perpetual. Every generation discovers it.

● Manzarek from *Feast of Friends*



RM: Isn't it amazing? Depending on how hip they are, how smart they are, and how intelligent they are, kids at 13, 14, and 15 years old get turned onto The Doors. You hear The Doors for the first time and it's like, "What is this music? Who are these guys?"

MM: There really isn't anything else like it. Considering all that came out during that era, you can't say The Doors are like anybody else.

RM: You're right. I didn't think we were particularly unique at the time, but now, after seeing all that happened in the '60s, I agree: The Doors *are* unique. It was that flamenco guitar of Robby Krieger—he actually plays with his fingers, you know; that bottleneck guitar thing is amazing. It was Densmore's hard, marching drums and Manzarek's left-hand bass and organ at the same time—how does he do that? And Morrison's strange, surrealistic poetry, plus the jazz, the classical, and the blues. Put all of that together, and that's The Doors.

MM: Which Doors songs sound the best on vinyl, and why?

RM: Well, OK, I'm the keyboard player, so I gotta think of the organ and "Light My Fire" on the first album [January 1967's *The Doors*]. On CD, the Vox Continental sounds a little edgy and a little thin to me. It's got a bottom to it, no doubt about that, but it just has a bite that I'm not really happy with. But when I hear it on the vinyl box set, it's like, "Ahhh, there's the sound. There's the Fender amplifier." You know, you put a Vox through a Fender Dual Reverb with a pair of 12-inch speakers, and *oooh*—that sound is loud, full, and fat with some edge to it, but it's got a



● Ray Manzarek at the piano with bandmates.

warm, round middle section. That's what the LPs have that the CDs don't.

You know, I love vinyl. I've heard from audiophiles about "the sound." In 1967, of course, you didn't know there were going to be such things as CDs. Vinyl—that was it. The sound was so good, so warm, and so rich. Some old-timer said to me, "You should have heard 78 RPMs. That vinyl was so thick." He said that's why the sound was so good—the vinyl was so thick, the grooves were so deep, and it's moving so fast. He said it sounded incredible. Of course, you only got like 3 minutes of music. You'd have to change it three or four times just to listen to "The End."

I remember when I got my first CD player and first CD, which was digitally recorded, not transferred from analog. It was Yo-Yo Ma, playing solo cello sonatas. I put the thing on, and my wife Dorothy said after about 2 minutes, "Gosh, I can't stand the sound—it's so edgy." And if you think about it, the bow across a cello string has a grind and a grit to it that you don't normally hear, but put that into a digitally recorded CD—we both went, "What have we done here?" It's deep, with a big bottom, and there's a high end up there, but the irritation of it on our nerve ends—see, we're acid heads. You can't do that kind of stuff to acid heads! (*both laugh*) I'm telling you, man—we're super-sensitized! ♦

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 **PHIATON**

Hi-Res To Go



A Portable Amplifier/DAC Combo Can Put Hi-Res Audio in Your Pocket

By Mark Fleischmann



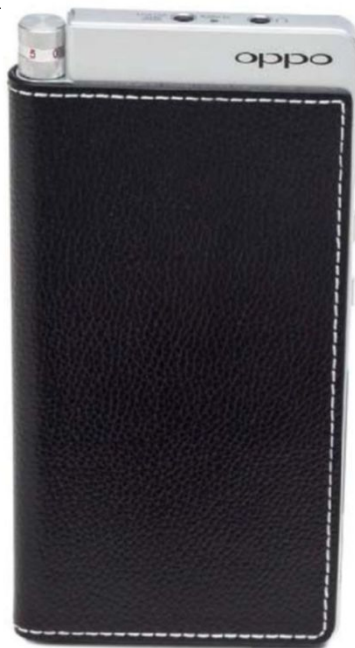
IT IS REMARKABLE that people who pay attention to what they feed themselves—

fussing about calories, cholesterol, and gluten—can be so cavalier about what they feed their headphones.

True, you can get used to anything, including the flea-sized amplifier in your smartphone and the messy output of your computer's soundcard. But for those who are willing to step up to a new normal, products that combine a USB digital-to-analog converter with a headphone amp can make good headphones sound better—and allow better headphones to fulfill their destiny, which is to bring listeners to a higher plane of audio existence. Last year, we reviewed a trio of headphone amp/DAC combos from Audioengine, NAD, and Essence ("Can Openers," July/August 2014 and soundandvision.com), though only one, the Audioengine D3 USB stick DAC, was potentially suitable for portable use. This time around, we're continuing our survey with five more headphone amp/DACs, but they're all portable models to take on the road with your laptop or, perhaps, your smartphone or portable hi-res music player. With all that hi-res goodness floating around out there, why be stuck at home?

We evaluated the amp/DACs with a variety of headphones and content, from lowly MP3 to CD-quality to hi-res, to determine how far they would take the ambitious listener who wants something better

than sonic junk food. Form factors ranged from two minimalist USB sticks (Schiit, AudioQuest) to a phone-shaped, shirt-pocket-sized model (Oppo) to bulkier units that might travel in coat pockets, briefcases, or backpacks (Celsus Sound, Sony). The three larger units have batteries, for functioning as pure headphone amps with phones or tablets. All five natively handle high-resolution formats up to at least 96 kilohertz and 24 bits, and some go even higher, but only the Oppo, Celsus, and Sony play DSD files.



Some have rarer talents: The Oppo's battery can charge a phone, the Celsus has Wi-Fi connectivity, and the Sony handles a balanced headphone connection.

MODELS IN THIS ROUNDUP

Schiit Fulla (\$79)
AudioQuest DragonFly v1.2 (\$149)
Oppo HA-2 (\$299)
Celsus Sound Companion One (\$595)
Sony PHA-3 (\$1,000)

THE HEADPHONES

Oppo PM-2
Sennheiser HD 600
Sony MDR-V6

THE TEST TRACKS, LOSSY

The Ramones: "I Wanna Be Sedated," *Road to Ruin* (MP3, 128 kbps)
Fotheringay (vocals by Sandy Denny): "Banks of the Nile," *Fotheringay* (MP3, 192 kbps)
Jorma Kaukonen: "Genesis," *Quah* (iTunes AAC, 256 kbps)
Dvořák: Scherzo, Symphony No. 9; Vienna Philharmonic, István Kertész (MP3, 320 kbps)

THE TEST TRACKS, CD-QUALITY

Yes: "And You and I," *Close to the Edge* (ALAC)
Teddy Thompson: "Over and Over," *Bella* (ALAC)
Marianne Faithfull: "Strange Weather," *Blazing Away* (ALAC)
Bach: Allegro, Concerto No. 3, Brandenburg Concertos; Bach Collegium Japan, Masaaki Suzuki (ALAC)

THE TEST TRACKS, HI-RES

Donald Fagen: "Maxine," *The Nightfly* (FLAC 48/24)
Nataly Dawn: "How I Knew Her," *How I Knew Her* (FLAC 88.2/24)
Deep Purple: "Smoke on the Water," *Machine Head* (FLAC 96/24)
Saint-Saëns: Maestoso, Allegro, Symphony No. 3; Boston Symphony Orchestra, Charles Munch (FLAC 192/24)

DSD WILD CARD

Ali Akbar Khan: "Rag Hemant," *Indian Architecture*



Budget Contenda

By Mark Fleischmann

Schiit Fulla Amp/DAC

PRICE \$79

AT \$79, THE SCHIIT FULLA—I'LL spare you the jokes—is the least expensive product in this roundup, one of the two smallest, and the only stick amp/DAC to include a volume knob.

Its 2.5-inch-long aluminum-wrapped steel chassis appears indestructible but is light as a feather. Pop it in your shirt pocket, and you won't even feel it. Mini-USB and headphone jacks are at either end, and a supplied 4-inch cable prevents stress on your computer's USB jack. There are no sampling-rate or other indicators, but do you really need them?

Fulla handles files up to 96 kHz and 24 bits. For Windows users, this makes driver installation automatic and trouble-free. In OS and playback software, the driver identifies itself as "I'm Fulla Schiit." The device is powered directly by USB and requires no charging.

In addition to Windows, Mac, and Linux, Schiit says Fulla has been known to work with Chromebooks and PS4, though the company stops short of a guarantee. iPhones require iOS 7 or 8, Apple cable, and power source. Android phones require OS 4 or 5, software for 4, and power source.

Fulla's handy volume dial understated the left channel near the

AT A GLANCE

Plus

- Budget pricing
- Volume knob
- Made in U.S.A.

Minus

- A trifle brash
- Channel imbalance in volume knob at bottom of range

vanishing end of its range, though not at moderate to high levels—in practice, no problem. "All small potentiometers have some nonlinearity in channel tracking at the lowest settings, so it is normal," says the manufacturer. Sonic character was sometimes brash compared with the others, though this was highly headphone-dependent.

When the inexpensive Fulla meshed with the high-end Oppo planar headphone, my notes were full of praise for their "liquid, sweet, not edgy" treatment of Jorma Kaukonen, "precise low-level vocal imaging" of Fotheringay's Sandy Denny, "depth!" in Dvořák, "precise reverb" in Marianne Faithfull (recorded in a church), "sweet, sassy strings" for the Bach Collegium Japan, and "vivid stage" on the Nataly Dawn track as it



- The Fulla is compact enough to fit in a shirt pocket.

built up to its epic strings-and-rock-band crescendo.

However, with the Sennheiser headphone, which is more challenging to drive and more neutrally voiced, the lossy artifacts on the Ramones and Jorma tracks were more noticeable, and Sandy's voice suddenly recessed. And the Donald Fagen track—"creamy, golden, and opulent" on the Oppo—became merely "lush and relaxed."

Fulla rarely got along with the compulsively revealing Sony headphone—though to be fair, that headphone was often unflattering to other amp/DACs reviewed here. The Ramones were a "thin blare," Sandy "ringy and austere," Jorma "threadbare," Dvořák and Yes "schematic," and Nataly "slightly fatiguing." On the neutral to positive side, the Schiit/Sony combo emphasized Marianne's vocal texture over the ambience in the church where she was recorded, and it was "sizzly—in a nice way" on Deep Purple. Its main coup was on the Fagen track, with "backing vocals

RATING

Schiit Fulla Amp/DAC

Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

SCHIIT FULLA AMP/DAC

PRICE: \$79

Schiit Audio • (323) 230-0079 • schiit.com

SPECS

Dimensions

(WxHxD, inches): 1.2 x 2.5 x 0.45 •

Weight (Ounces): 1 • **Inputs:** USB

Mini-B (1) • **Outputs:** 1/8-inch stereo analog (1) • **Output Power:** 250

mW, 16 ohms; 200 mW, 32 ohms; 175

mW, 50 ohms; 40 mW, 300 ohms •

Output Voltage: Up to 9.5 V p-p into

80-plus ohms • **Output Impedance:** Less than 0.4 ohms •

Compatible Headphone Impedances:

16 to 300 ohms • **Sampling Rates:**

44.1, 48, 88.2, 96 • **Upsampling:** No

• **DAC:** AKM AK4396 • **Windows**

Drivers Installed: DS, WASAPI-

event, WASAPI-push

THE VERDICT

This is among the least expensive decent headphone amp/DACs on the market, but be careful about headphone matching.

beautifully high-lighted and separated."

The Schiit Fulla is the budget champion it purports to be. But for consistent results, be sure to mate it with headphones that err on the thick, soft, rich side of things, as opposed to the bright, detailed, schematic side.



- A large volume knob takes pride of place on the housing.



- The Fulla ships with its own 4-inch cable.

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Decoupled Double Dome tweeter

Son of DragonFly

By Mark Fleischmann

AudioQuest DragonFly v1.2 Amp/DAC

PRICE \$149

THE AUDIOQUEST DRAGONFLY v1.2 is a second-generation revision of the original DragonFly, which made a big splash with a DAC design by the distinguished Gordon Rankin of Wavelength Audio. Improvements include a more direct analog signal path and a fortified power supply. AudioQuest says they are audible as smoother and more open sound with greater dynamic contrast. AudioQuest recommends

AT A GLANCE



Plus

- More open top end than old model
- Same great styling
- Plays 176.4- and 192-kHz files



Minus

- Rates above 96 kHz are halved
- No DSD

24 hours of break-in for best performance. The original sold for \$249 and is now marked down to \$99—an incredible bargain. The new one sells for \$149.

DragonFly's enclosure is black matte plastic and flyweight in a shirt pocket. It has a headphone jack at one end and a USB A plug at the other, and it's powered by the computer's USB jack. The sole indicator (and most endearing trait) is a dragonfly-shaped LED that glows in a different color for each sampling rate: green for 44.1, blue for 48, amber for 88.2, and magenta for 96.

Rates of 176.4 and 192 kHz are supported for playback but are halved to bring them within the DragonFly's capabilities. With native resolution limited to 96/24, computer driver installation is not required. As with

some similar products, DragonFly isn't compatible with Windows Vista and has had issues with Win 8.0; you'll need the free update to Win 8.1.

Although DragonFly has no volume knob per se, it does have an internal analog volume control that piggybacks onto the volume sliders in your computer operating system. AudioQuest suggests maxing the volume control of your music player software and adjusting the OS volume control to taste for headphone gain.

DragonFly scored high with the mellow Oppo and neutral-ish Sennheiser cans and a conditional passing grade with the merciless Sony. With AQ/Oppo, the Ramones, even in low-bit-rate MP3, were "smooth, balanced, like vinyl"—a miracle. The combo controlled the natural rising edge of Denny's voice and even "fixed" Teddy Thompson's gorgeous vocals, which were recorded with an aggressive edge (and almost always sounded that way). Orchestral and quasi-orchestral material like the Dvořák and Yes tracks were well balanced, and the pipe-organ-assisted Saint-Saëns symphony "blasted nicely." Compared with Schiit, DragonFly was "slightly darker-toned" in the Bach and "darker, rounder, smokier" in "Smoke on the Water."

I swooned only a tad less with the AQ/Sennheiser combo: The Ramones were "light and agreeable," as opposed to miraculous, but every track was a winner. As for the AQ/Sony combo, I can only report the results, not explain them: The lossy tracks were quite listenable, the CD-quality tracks were mixed, and the hi-res tracks were "too thin" (Deep Purple and Fagen) or "too bright" (Nataly and Saint-Saëns).

The AudioQuest DragonFly works well with a variety of headphones and content, and it accounted for some of the happiest moments of my listening sessions.

RATING

AudioQuest DragonFly v1.2 Amp/DAC

Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

AUDIOQUEST DRAGONFLY v1.2 AMP/DAC

PRICE: \$149

AudioQuest • (949) 585-0111 • audioquest.com

SPECS

Dimensions

(WxHxD, inches): 0.75 x 2.4 x 0.4

• **Weight (Ounces):** 0.7 • **Inputs:**

USB (1) • **Outputs:** 1/8-inch stereo

analog (1) • **Output Power:** Up

to 125 mW at 32 ohms • **Output**

Voltage: Up to 2 V RMS • **Output**

Impedance: 0.58 ohms • **Com-**

patible Headphone Impedance:

12 ohms • **Sampling Rates:** 44.1,

48, 88.2, 96 • **Upsampling:** No

• **DAC:** ESS ES9023 • **Windows**

Drivers Installed: DS, WASAPI-

event, WASAPI-push

THE VERDICT

AudioQuest has updated its giant-killer DragonFly with more crowd-pleasing voicing and a lower price, making this one of the best values in its category.



I have no qualms about giving it a five-star performance rating. However, if you're into hi-res audio, headphone matching becomes crucial.

The AudioQuest DragonFly works well with a variety of headphones and content.

● **The DragonFly stick is just 2.4 inches long.**

● **The DragonFly has a USB plug at one end and a headphone jack at the other.**



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**WORLD'S LARGEST SELECTION
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Leather-Sheathed

By Mark Fleischmann

Oppo HA-2 Amp/DAC

PRICE \$299

OPPO'S BLU-RAY PLAYERS ARE reference-quality, and the company's planar headphones are winning positive reviews. The HA-2 is the more portable of their two amp/DACs.

To handle this slim leather-sheathed beauty is to love it. About the size of a smartphone, it's just a half-inch thick, not terribly heavy, and shirt-pocket-friendly. A cylindrical knob for power and volume is at top left. Headphone and combination line in/out jacks are on top. On the right side are pinpoint power indicators and switches for bass boost and headphone gain. The bottom includes USB A and Micro-B ports plus a three-way input switch that selects either of the two USB digital inputs or the analog input.

AT A GLANCE

+ Plus

- Slim shirt-pocket form factor
- Phone-friendly
- Resolution up to 384/32 plus DSD

- Minus

- Not an ideal match for Oppo's own headphones

The HA-2 handles file resolutions up to 384-kHz/32-bit plus DSD. While there are few if any 384/32 commercial downloads, internal processing with 32-bit depth prevents software volume controls from reducing dynamic range or truncating bits. As always, Windows driver installation is required for files over 96/24. Volume control of USB sources is mapped onto the DAC chip, which can then adjust volume without use of a bit-truncating DSP. Twiddling the grippy, knurled volume knob for further adjustments is a pleasure.

The Class AB amp runs on battery power for non-computer sources. It is specified to play for 13 hours with analog input or 7 hours with digital input, and it charges in 90 minutes with the supplied power adapter (or longer via computer USB jack). The battery can charge connected smartphones. Supplied cables include analog, USB Micro-B, and Apple Lightning/USB A.

Sennheiser's cans consistently flattered the Oppo. The two aced the lossy tracks, making the best of low-bit-rate Ramones and Jorma and beating every other roundup combo in their control of Sandy's steely wail and Dvořák's orchestral swells. Among the CD-quality tracks, Marianne's voice was well integrated with the church ambience, Teddy's edgily recorded vocals made



- The Oppo won points for its elegant leather case.

"perfect sense now!," and Yes was lavished with "beautiful, irresistible flow, listenable but not too laid-back or dumbed-down." Oppo/Senn didn't lose steam in the hi-res tracks: Nataly's challenging peak was "fatigue-free," and the Saint-Saëns—whose organ/orchestral weaponry demands to be played loud—had that elusive "hi-res ease."

Ironically, the Oppo amp/DAC was less consistent with the Oppo headphone, at least on my test tracks; maybe the thick, darkish voicing of both was too much of a good thing. True, they were "best case for lossy" on the Ramones and downplayed the lossy artifacts on Jorma's acoustic guitar. They also minimized the hardness of Dvořák's peaks and Teddy's vocals. But they "rolled off" Sandy's guitarists, "took the sparkle and chime" out of Yes guitarist Steve Howe's 12-string acoustic, and "downplayed" textures in the Saint-Saëns—though the Ali Akbar Khan raga was "fully realized," with the sitar rising out of the haze like a metallic dragon.

The Oppo did OK with the often tetchy Sony headphone on the

RATING

Oppo HA-2 Amp/DAC

Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

OPPO HA-2 AMP/DAC

PRICE: \$299

Oppo Digital • (650) 961-1118

• oppodigital.com

SPECS

Dimensions

(WxHxD, inches): 2.7 x 6.2 x 0.5

• **Weight (Ounces):** 6.2 • **Inputs:**

USB A (1), USB Micro-B (1), 1/8-inch

analog • **Outputs:** 1/8-inch analog

headphone (1), 1/8-inch stereo line (1)

• **Output Power:** 300 mW, 16 ohms;

220 mW, 32 ohms; 30 mW, 300 ohms

• **Output Voltage:** Up to 3 V RMS

• **Output Impedance:** 0.5 ohms •

Compatible Headphone Imped-

ances: 16 to 300 ohms • **Sampling**

Rates and Bit Depths: 44.1-384

kHz, 16/24/32-bit, DSD 64-128-256 •

Upsampling: Limited (chip operates

at 100 MHz) • **DAC:** Sabre ES9018-

K2M • **Windows Drivers Installed:**

ASIO

THE VERDICT

The Oppo HA-2 sounds fabulous, supports digital connections for a wide range of smartphones, and can even charge a phone.

low-bit-rate lossy tracks, and considering how forthrightly the Sony reveals lossy artifacts, that's actually high praise. As resolution climbed to CD-quality, Yes' 12-string guitar harmonics were "a delight," even if the mellotron was "a little hot," and other tracks were good if not exceptional. If Marianne had "less depth" and Bach was "dry," that was mostly the headphone. But peak moments in Nataly and Saint-Saëns induced discomfort.

The Oppo HA-2 is beautifully designed and thrives with neutrally voiced headphones. It tells the truth, with a subtle spin, often superbly.



- The HA-2 is about the size of a smartphone and just a half-inch thick.

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*Sam Posten
Home Theater Forum*



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The Lone Streamer

By Mark Fleischmann

Celsus Sound Companion One Amp/DAC

PRICE \$595

CELSUS SOUND'S COMPANION

One is the only product here that streams wirelessly from other devices. It uses Wi-Fi, with AirPlay for iOS devices and Macs and DLNA for Android and Windows. It supports streaming up to 192/24 and wired connections up to 384/32.

The Companion is about the height and width of a large smartphone, but twice the thickness, and quite hefty due to the machined-aluminum chassis. Headphone, line, and S/PDIF minijacks are on top, and separate USB jacks for charging and signal connections are on bottom, with power and volume buttons on the right side.

On the left side are three more buttons: headphone gain, Wi-Fi/USB switch, and connection mode. That last one allows streaming devices to connect through either your Wi-Fi network or the

AT A GLANCE



- **USB and Wi-Fi connections**
- **Compatible with Windows, Mac, iOS, Android**
- **384-kHz/32-bit resolution**



- **Large and heavy**
- **No power adapter**

Companion's built-in Wi-Fi access point. Awkward placement of the left-side controls may result in accidental thumb-pressing when you reach for the right-side volume keys. The glass top has legends for everything, pinpoint power indicators, and a squiggle that lights up red for SSID mode, blue for Wi-Fi mode, or green for line-out mode.

The Companion requires Windows driver installation for greater than 96/24 resolution. It is specified to play for six hours per charge, takes eight hours to charge, and doesn't come with a power adapter for faster charging (boo), though a generic multiport 2A/5V USB charger will serve. The unit does come with two USB cables (long A to Micro-B, short Micro-B to Micro-B) and two Apple cables (short USB Micro-B to Lightning and one to 30-pin). The soft leather carry case has an extra compartment for your phone.



The Companion provided acceptable or better results with all three headphones—yes, even with the difficult Sony, and at all resolutions. The low-bit-rate Ramones were “surprisingly coherent,” and Jorma had “beautiful vocal tone.” At the other resolution extreme, I noticed Donald’s enunciation for the first time, grooved on the vivid tone color of the Saint-Saëns organ/orchestral orgy, and admired Nataly’s “excellent buildup and coherence” (in other words, strong dynamics). The word *coherence* cropped up a lot.

With the more neutral Sennheiser, the Companion had mixed results. After a weak start with the low-bit-rate tracks, it handled Dvořák’s higher-bit-rate swells with aplomb. While I’d have liked more 12-string harmonics on the Yes track, “liquid midrange and excellent flow” were ample compensations. I’d have liked more colorful texture in Bach and Deep Purple, and Nataly’s big buildup had me lowering the volume. But I admired the “subtle low-level imaging” in Saint-Saëns and the “excellent structure” of Donald’s elaborately layered vocals and instrumentation.

Companion did its best work with Oppo’s planar headphone—it had a taste for caviar—and its penchant for soft-focusing was often timely. The über-lossy Ramones track got “smoothed out,” and Jorma’s voice and guitar were “rounded and well behaved.” The combo glossed over Sandy’s vocals and darkened Dvořák’s tonal balance, though this made the dynamic extremes of these tracks easier to take. I enjoyed the suddenly golden timbre of Teddy’s vocals, the balance between Marianne’s voice and the stony church walls, the chugging bass in Deep Purple, and Nataly’s challenging dynamic swell. And when the tabla entered in the DSD sitar raga, I loved having that tunelessly rhythmic sensation in my head.

RATING

Celsus Sound Companion One Amp/DAC

Performance ★★★★★
Features ★★★★★
Ergonomics ★★★★★
Value ★★★★★

CELSUS SOUND COMPANION ONE AMP/DAC

PRICE: \$595

Celsus Sound • (219) 364-6549 • celsus-sound.com

SPECS

Dimensions

(WxHxD, inches): 3 x 5.67 x 0.63 •

Weight (Ounces): 3.2 • **Inputs:** USB

Micro-B (2, 1 for charging; 1 for data)

• **Outputs:** 1/8-inch stereo analog headphone (1), 1/8-inch stereo analog line (1), 1/8-inch digital optical (1) •

Output Power: 160 mW, 32 ohms; 28

mW, 300 ohms • **Output Voltage:**

High-gain 3 V RMS maximum, low gain

1.5 V RMS maximum • **Output Impedance:**

N/A • **Compatible Headphone Impedances:** 16 ohms to 300 ohms •

Sampling Rates and Bit Depths: 44.1,

48, 88.2, 96, 176.4, 192, 352.8, 384 kHz;

16/24/32-bit; DSD 64-128 • **Upsam-**

pling: No • **DAC:** ESS ES9018K2M •

Windows Drivers Installed: ASIO

THE VERDICT

The Celsus Sound Companion

One looks like a big smartphone, sounds good to great with a wide range of headphones, and is one of the few headphone amp/DACs with streaming.

While I like playing fields best when they’re level, I did check out the Companion’s unique streaming capability. My old iPad 2 happily recognized “Companion One-83E2EC” and started streaming to the amp/DAC’s Wi-Fi access point. Moving into an adjacent room cut the connection.

If you’re looking for an amp/DAC that meshes well with a variety of headphones and content, the Celsus Sound Companion One is the strongest and most consistent of these five products—and streaming lets you cut the awkward umbilical to your source component of choice.

● The Celsus streams from other devices.

The Celsus is the strongest and most consistent of these products.



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Walkman's Pal

By Mark Fleischmann

Sony PHA-3 Amp/DAC

PRICE \$1,000

THE PHA-3 IS ONE OF SEVERAL amp/DACs offered by Sony in the U.S. It's the most expensive product here, as well as the only one with a balanced headphone output, a Toslink optical input, and a dedicated DSD indicator.

In black aluminum, the look is utilitarian but thoughtful, with rounded sides and rubber runners on top and bottom—great for anchoring the unit on a desktop or protecting source components strapped on with supplied silicone belts. The pleasingly oversized volume knob and brightly brass-ringed headphone outputs (balanced and conventional) are protected in a recess on the front.

In back are the inputs. There are two USB Micro-B jacks, one for charging, the other for sources including computers, Sony's Walkman music players, and Sony's Xperia smartphones (other non-iOS phones must go analog). You also get USB A for iOS devices, the optical input, and a minijack that toggles between

AT A GLANCE



Plus

- Stellar sound quality
- 384-kHz/32-bit and DSD-capable
- Rubber pads grip desktop



Minus

- Too large for shirt pocket
- No power adapter

analog line in and out. On the left side are switches for headphone gain and Sony's DSEE HX circuit, which aims to enhance compressed or CD-quality files in the process of converting them to hi-res sample rates and bit depths.

Resolution maxes out at 384/32, far greater than most download stores offer, and requires Windows driver installation for sampling rates over 96 kHz. You might also download Sony's simplified Hi-Res Audio Player software. Sony specifies 28 hours of analog run time. The player takes 15 hours to charge on computer, and (as with all these rechargeable amp/DACs) charges only with power off; you can't charge and listen simultaneously. The AC-UD20 power adapter sells for \$31 on Amazon and reduces charging time to 6 hours; a product with a four-figure price tag should have included it. Supplied cables include a long USB A to Micro-B, for computer connection, and two short ones, a dedicated Walkman cable and a generic 1/8-inch analog.

The PHA-3 had a strong personality and imposed its smooth, rich sound on the headphones with almost uniformly excellent results. It loved the Oppo most of all, giving

even the très-lossy Ramones file "that Sony glow," though without concealing lossy artifacts. Sandy's vocal edge was reined in, but the guitars weren't anesthetized. Steve Howe's 12-string on the Yes track got "more attack, less harmonics," while Teddy's weirdly recorded vocals got "excellent presentation," and Sony's occasional tendency to soft-focus didn't miss Marianne's church space. But the biggest payoffs were in the hi-res tracks. When Nataly's drummer entered, the whacking reverb made me sit up. And the 192/24 Saint-Saëns org/orch attack was "virtuosic, smooth, 3D, warm but not dumbed-down, playable loud," while the DSD'd sitar was "focused and detailed."

Complaints surfaced with Sony/Sennheiser, mostly with tracks that had previously rankled with other combos. But there were notable successes, including a natural and ideal presentation of the dynamically challenging Denny vocals, a Yes performance that traded detail for momentum, a sweet and tuneful Bach string-orchestra sound, a gentle top end that allowed Deep Purple's bassist to pop out of the bass-shy Sennheiser, and "majestic flow and vibrancy" in the Saint-Saëns, even if the DSD-delivered sitar was "a tad opaque."



● The headphone outputs are protected in a recess in the front of the unit.

RATING

Sony PHA-3 Amp/DAC
 Performance ★★★★★
 Features ★★★★★
 Ergonomics ★★★★★
 Value ★★★★★

SONY PHA-3 AMP/DAC

PRICE: \$1,000

Sony (877) 865-SONY • sony.com

SPECS

Dimensions

(WxHxD, Inches): 3.14 x 5.53 x 1.14

• **Weight (Ounces):** 10.6 • **Inputs:**

USB Micro-B (2, 1 for charging; 1 for PC/Mac, Walkman, Xperia phone), USB A (1, for iOS), 1/8-inch stereo analog (1) • **Outputs:** 1/8-inch headphone (conventional and balanced), 1/8-inch analog line (1) • **Output**

Power: Maximum 320mW + 320mW (Balanced Connection, 32 Ohms, 1% distortion) • **Output Voltage:** N/A • **Output Impedance:** n/a • **Compatible Headphone Impedances:** 8 to 600 ohms • **Sampling Rates:** 44.4, 48, 88.2, 96, 176.4, 192, 384 •

Upsampling: Yes (DSEE-HX) • **DAC:** ESS ES9018 • **Windows Drivers**

Installed: ASIO

THE VERDICT

If the prime directive of an amp/DAC is to make headphones and music sound as beautiful as possible, the Sony PHA-3 is ready to explore the universe.

The Sony amp/DAC mitigated the excesses of the Sony headphone. They didn't overemphasize the lossy crudity of the low-bit-rate files or the foibles of other habitually problematic tracks. For the first time, I noticed how Marianne's vocal reverb went outward from center to left and right. Bach was "sweet but well defined," and Deep Purple offered an "excellent balance of texture and comfort." Donald

Fagen was "gorgeous, not as warm as some combos, but not thin or light." Nataly achieved her dynamic outburst painlessly, though the brass fanfares in the Saint-Saëns were "a little bright." The sitar number was "well lit, but I'd prefer more smoke."

Sony's PHA-3 has the iron will that a four-figure amp/DAC should have. It wants to make nearly everything sound sweet, and nearly always does, especially with hi-res content. ♦

● The PHA-3 has a balanced headphone output.

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Return of the Walkman

By Mark Fleischmann

Sony Walkman NW-ZX2 Music Player

PRICE \$1,200

THE NEW TOP-OF-THE-LINE SONY Walkman is not the smallest or lightest dedicated music player out there. But is smaller always better? The smallest music player in my possession is the sixth-generation iPod nano. The tiny touchscreen device has about the footprint of a postage stamp, but that doesn't make it easier to use. There's not much room for a fingertip to move. For the seventh and final generation, Apple moved to a larger form factor, similar to early nanos except with the touchscreen replacing the clickwheel. Likewise, Sony went for an old-school nano-like form factor in its Walkman NWZ-A17. But that was a relatively lightweight device in more ways than one. For the top-drawer Walkman NW-ZX2, reviewed here, Sony decided on more substantial build quality—and more of it.

Meet the Über-Walkman

The top-of-the-line Walkman is about a half-inch taller than an iPhone and twice as thick, though far smaller than the Walkman cassette players of yesteryear. It'll fit easily in your shirt pocket, but at half a pound, you'll feel it. Inside that heavyweight

AT A GLANCE

+ Plus

- Deluxe build quality and beautiful design
- Plays DSD and files up to 192/24
- 128 GB plus microSD slot

— Minus

- Heavy
- Pricey

chassis are some pretty advanced electronic guts, though, the kind that support great sound as well as a ton of bells and whistles.

Sony says the aluminum-covered gold-plated copper chassis "delivers high rigidity with low impedance, the ideal base from which to deliver superb audio reproduction." Most of the NW-ZX2's front is covered by a 4.6-inch, 854x480-pixel touchscreen. The top and left edges are blank. All controls are on the right side; these include power, two volume keys, and three transport keys—all recessed, not bulging. They won't catch on your clothing and are easy to find by touch. All jacks are on bottom, including the 22-pin proprietary-to-USB connector, microSD card slot, and 1/8-inch headphone jack, which is brass-ringed. The back panel is leather-textured.

Onboard memory is 128 gigabytes, but you can plug in a microSD, microSDHC, or microSDXC card to add up to another 128 GB. The unit is estimated to get

60-plus hours per charge when playing uncompressed PCM or highly compressed MP3 files; going to lossless FLAC cuts that to 33 to 43 hours, DSD to 16 to 22 hours, and MPEG-4 video to 9 hours. Other supported formats include ALAC, AIFF, and WMA, plus JPG for images. Resolution can be up to 24 bits and a sampling rate of 192 kilohertz. Computer USB charging takes 4.5 hours. No quick-charge power adapter is supplied, which is regrettable for a \$1,200 product.

The Walkman is a double-threat wireless device with dual-band Wi-Fi to access music on DLNA-compliant devices, and Bluetooth with Sony's own LDAC signal format,

which supports compressed 96/24 natively. LDAC-compliant products include Sony's Bluetooth headphones and active speakers.

Boot the Walkman and swipe aside the opening screen (unless you choose to set a passcode). On the bottom of the screen you'll see a row of three icons: a home button, flanked by a back button and another button, this last leading to a screen offering quick access to Ethernet, the video player, DLNA, sound adjustments, and the music player. A second-from-bottom row of icons just above these accesses the Now Playing screen, sound adjustments, main menu, video library, and DLNA settings. A third-from-bottom row, sometimes visible depending on context, includes four icons: Google (for numerous Google-related features), Google Play Store, Bluetooth, and Ethernet. The main menu encompasses a dizzying 44 items, spread over three screens, most of which have nothing to do with music. The Chrome browser, YouTube, e-mail, and maps icons piggyback onto the unit's Wi-Fi functionality. Do you really need the calculator and clock?

Sony Meets Oppo

I used the Walkman with Oppo PM-2, Sennheiser HD600, Sony MDR-V6, and AKG K240 headphones and loaded music from a Lenovo Windows 7 desktop PC using the operating system's file interface. (Sony also offers a Media Go application for this purpose.) Starting with the Oppo PM-2 planar headphones—at \$699, a worthy match for a \$1,200 player—I ran through lossy, CD-quality, and high-resolution files.

The NW-ZX2 is one of the smoothest audio products, of any kind, I've ever reviewed. The smoothing I'm talk-



● The NW-Z2 is about the size of a cell phone.

RATING

Sony Walkman NW-ZX2 Music Player

Performance ★★★★★
Features ★★★★★
Ergonomics ★★★★★
Value ★★★★★

THE VERDICT

Sony's top-of-the-line Walkman music player is comfortably overbuilt, loaded with bells and whistles. And it sounds fantastic.

MUSIC PLAYER

SONY WALKMAN NW-ZX2 MUSIC PLAYER

PRICE: \$1,200

Sony • (877) 865-SONY • sony.com

ing about is not a dumbing down, but an absence of noise, an honest, clean, and unsmudged approach to everything. Whereas an iPod or smartphone would render objects within the soundstage as etched cartoons, the Walkman rendered 3D objects, loaded with shadings and nuances, often against spatially realistic or just dead silent backgrounds. It was dynamically prodigious, kept up with harmonic complexities, and its transient aim was true. Its transparency and consistency were awe-inspiring. And it was just plain fun to listen to.

Dave Frishberg's "A Little Taste" was from his *Classics* compilation. Ripped to MP3 at 192 kilobits per second, the lovably nasal voice had a faint digital burr, but I had to listen for it—the overall impact was warm and pleasing. I was hard-pressed to find lossy artifacts in Deodato's jaunty reimagining of Gershwin's "Rhapsody in Blue," from *Deodato 2*, until the trumpet entered in the left channel. Only then did the astringent MP3/192 kbps format artifacts become obvious. John Cale's cover of Jonathan Richman's "Pablo Picasso," from *Helen of Troy*, with its arch, squirming guitars, wasn't audibly compromised in MP3 at the top sampling rate of 320 kbps.

CD-quality Apple Lossless rips started with Richard Thompson's "When the Spell Is Broken" from *Acoustic Classics*. The Walkman/Oppo team sounded better than either of my reference speaker-and-amp systems, giving the aging baritone its full measure of leathery texture and the incisive acoustic guitar plenty of rhythmic momentum and snap—and all without the edge I've grown accustomed to via speakers (even good ones). In The Nice's irreverent cover of Sibelius's "Karelia Suite," captured for *Fillmore East 1969* by the capable Eddie Kramer, the Walkman

and the Oppo meticulously excavated the hall reverb that leaked into the close-miking of the organ, bass, and drums, enriching the bombastic bomber-attack noises (which must have made Sibelius turn in his grave). The only thing that fell flat was Pink Floyd's "Louder than Words," the final track on *The Endless River*, which seemed digitally brittle, crunchy, and two-dimensional (though other headphones would tell a different tale).

The Walkman/Oppo pairing loved every high-resolution FLAC I threw at it. In Bob Marley & the Wailers' "Satisfy My Soul," from *Kaya* (96/24), there was so much to love: the deep, effortless, rocking bass, the pinpoint-precise high-frequency texture of the hi-hat, and imaging of the warm, smoky voice. Joni Mitchell's cover of the American songbook classic "You're My Thrill," from the orchestrally fortified *Both Sides Now* (96/24), became an epic, with the prewar-style strings enveloping my planar-driver-sandwiched brain in stunningly imaged instrumental color. In the much-loved and much-demoed "Take Five," from the Dave Brubeck Quartet's *Time Out* (176.4/24), well-imaged objects arose out of an inky black background, the left-channel drum solo swung with

unstoppable momentum, and there was no unpleasant edge to the sax (and there should never be). There should be an edge to Billie Holiday's voice in "Violets for Your Furs," from *Lady in Satin* (DSD), because that's how it sounded toward the end of her life—drenched in echo in a futile attempt to blunt its raw, rasping, almost painful timbre—and the Walkman/Oppo combination delivered the news. Finally, they offered a best-case version of Gershwin's *An American in Paris*, with William Steinberg leading the Pittsburgh Symphony Orchestra (192/24). This colorful composition is recorded flat and dry, with virtually no reverb, and tends to sound drab and gray. But this combination of playback gear made it come alive,

tooting horns and all, and the listening was fatigue-free.

More Headphones

Switching to the Sennheiser HD600 headphones produced similar, if not identical, results. The Pink Floyd track lost its unseemly crunch, flowed better, and could be played louder. There was a more lossy-metallic edge in Frishberg, even better hall reverb in The Nice, more hi-hat in Marley, and a less tactile feel to the drums in Brubeck. Overall the experience was equally as pleasurable. Moving to the sometimes merciless Sony MDR-V6 upped the treble, but the combination was palatable at just slightly lower volume. The MDR-V6 didn't rob the Walkman of its smooth personality, even in the challenging Pink Floyd track. The most pleasant surprise was what the Walkman did for my old Austrian-made, hard-to-drive AKG K240—it played the headphones comfortably with the volume slider three-quarters up, and just a little too loud with the slider maxed. A little headroom never hurts. Even running full tilt, the Walkman's amp didn't choke on the AKG—imaging, bass, and other parameters were musically satisfying. The aging AKG is still my idea of a soul-satisfying (albeit ear-pinching) headphone, but the Walkman is the first portable music player I've found that can cope so easily with its demands on the source. The major coup of the Walkman/AKG team was the most coherent—and unexpectedly spacious—performance of the Gershwin.

While I accessed most content by cabling the Walkman to a computer and dragging files, I also tried the wireless connectivity. The Walkman had no trouble connecting to two desktop PCs through a Wi-Fi G-type router. The Windows 7 PC connected immediately; the Windows XP machine required just a click on a bubble.

Bluetooth implementation has a couple of potentially useful details. The Walkman can show all Bluetooth devices or only paired ones. It assigns a numeric passcode to all pairing routines, and allows renaming of devices, which may prevent



● The Walkman will pair with your Bluetooth devices.

confusion of similar devices. Note that the NW-ZX2 is intended only to transmit Bluetooth signals to a wireless Bluetooth headphone or speaker (neither of which I had on hand to test this function). You cannot, for example, use this connection to feed it music from another nearby Bluetooth source with a resident library.

With the NW-ZX2, Sony has breathed new life into the venerable Walkman name. Yes, this slab of metal and glass and silicon is pricey. And the folks who believe the Pono hate, declare that standalone audio players are passé, and insist that their smartphones are the ultimate audio source components will remain unmoved. But if you want a player that's beautifully designed, blithely overbuilt, loaded with every conceivable feature, and delivers great sound into even fairly demanding headphones, this Walkman is fit competition for, say, the Astell & Kern AK240—which costs more than twice as much. Thus, you might even call this Walkman a bargain, if you can afford it to begin with! ♦

Audio editor Mark Fleischmann is also the author of the annually updated book *Practical Home Theater* (quietriverpress.com).



● All of the Walkman's controls are located on its right side.

Beats in the Bubbles

By Darren Ankosko

Underwater Audio Swimbuds Sport Waterproof Headphone

PRICE \$70

I WAS PLEASANTLY SURPRISED when my audition of the Swimbuds Sport Waterproof headphone began with a familiar voice. After discarding multiple plastic baggies and opening the mesh pouch and zipper case, I was greeted by a card with an access code for a downloadable 30-minute swim workout guided by Rebecca Soni. Her staggering career accomplishments—including eight world records and, for Team U.S.A. at the Olympics, three gold medals and three silver—were severely understated here with a title that read: *Olympic Medalist*. I trained with Rebecca at the Scarlet Aquatics Club in New Jersey from the late 1990s through 2005, and so welcomed the excuse to pick up the phone and call an old friend.

But getting back to the matter at hand: The Swimbuds Sport Waterproof headphone (\$70), a redesigned version of Underwater Audio's original Swimbuds (\$40), is aimed at the serious aquatic athlete and "designed to stay put during flip turns and the most rigorous aquatic workout." It comes with a 1.3-foot cord and utilizes a standard 3.5mm minijack to link up with your favorite devices. A 3.25-foot extension cord is also provided for more flexibility above water.

I tested the Swimbuds Sport with a fourth-generation iPod Shuffle waterproofed by Underwater Audio, which is available as part of a Sport Bundle (\$175) and a Sport Mega Bundle (\$200). The latter adds the HydroHarmony waterproof headband headphone; both bundles include Soni's swim workout download (also sold separately for \$30).

Ready for some swim action, I loaded a two-hour montage of country, metal, rock, blues, and jazz

AT A GLANCE



Plus

- Comfortable in and out of the water
- Impressive sound while swimming (with some limitations)
- 1-year warranty



Minus

- So-so sound above water

onto the iPod, dusted off my equipment bag, and headed for the endless black line.

Whether you buy the Sport headphone on its own or opt for one of the bundles, you get four types of ear tips. The Tree tips are designed exclusively for swimming and create "maximum noise isolation and the best water seal," while the Fins are a second watertight option for those who can't get a perfect fit with the Trees; Underwater Audio guarantees that one or the other will seal out water while you swim. The Ergo tips come in small, medium, and large sizes and are designed for a wide range of sports.

The Mushroom tips are for every-day use.

In the Pool

I began my workout with the Trees. Carefully following the instructions, I inserted them into my ear canals upside-down before tucking the wires under and around my goggle strap. I clipped the iPod Shuffle to the back of my goggle strap and stretched my swim cap over it. The setup was ideal, with no dangling wires and with easy access to volume and track-selection buttons.

I pushed off and started with a standard, freestyle-based warm-up: 500 meters swim, 400 pull, 300 kick, 200 drill, and 6 x 100 build to race speed. After 2,000 meters, not only were the tips still lodged comfortably and securely in my ears, but I was impressed by the sound quality of the headphone. I could hardly contain my excitement over discovering this new dimension to the sport I love, and I even found myself

RATING

Underwater Audio Swimbuds Sport Waterproof Headphone

Performance ★★★★★
 Features ★★★★★
 Build Quality ★★★★★
 Value ★★★★★

singing along silently to some of my favorite tunes.

In all the years I've been swimming, including four years as a member of the University of Virginia's men's swimming and diving team, I have never heard such crisp, clear, and full-bodied music while in the water—and the fact that the gear didn't produce any noticeable drag was an obvious bonus. My only relatable experience was swimming in the warm-up pool at the University of Maryland back in the early 2000s as a club swimmer. I remember being impressed by the allure of underwater speakers, but I also remember not being able to decipher much more than a muffled drum track.

After my successful warm-up, I moved on to an IM set (Individual Medley of all four strokes) and quickly ran into some issues. The Trees stayed firmly planted in my ears during freestyle, flip turns, and underwater streamline, but it was a different story for butterfly, backstroke, and breaststroke. All of these strokes, when executed with proper technique, require the anterior and/or medial deltoids (shoulders) to brush past the ears. This repeatedly caused over-insertion, misalignment, and/or complete dislocation of the earbuds.

I fiddled with the Tree tips but could not overcome the problem, so I tried the Fin tips and eventually

settled on the large Ergo tips, even though they aren't designed specifically for



THE VERDICT

The Swimbuds Sport headphone gets the job done in the water but falls somewhat short in its quest to provide a high-quality, multi-sport solution.

HEADPHONE

UNDERWATER AUDIO SWIMBUDS SPORT WATERPROOF HEADPHONE

PRICE: \$70

Underwater Audio • underwateraudio.com

SPECS

Type: Waterproof in-ear • **Driver Size (Inches):** 0.35 (9mm) • **Weight (Ounces):** 0.42 • **Impedance:** 32 ohms (+/-15%) • **Sensitivity:** 113 dB +/-4 dB • **Features:** 1.3-foot cord with gold-plated 3.5mm miniplug • **Accessories (Included):** 3.25-foot extension cord, four types of earbuds, black mesh carry bag • **Available Colors:** White

swimming. They were the most resistant to dislodging, thanks to their slim profile, especially when tucked beneath my swim cap—but none of these other tips delivered the same watertight fit and clear sound that the Trees provided while I was swimming freestyle. I also learned, through trial and error, that I was able to achieve the best seal when both the tips and my ear canals were dry.

The Swimbuds Sport headphone significantly reduced pool deck and underwater noise. Music came across loud and clear in the water and was accompanied by a unique second soundtrack. Imagine you're sitting below deck on a sailboat with a fiberglass hull; you hear a muted representation of your surroundings if you really concentrate, but what is readily apparent is the sound of rushing water and bubbles as they find their path around the bow. This flowing soundtrack is present at all times while swimming with the Sport headphone, but at no point did I find it to be intrusive.

Even with the many distractions and supplementary sounds in the water, the Sport delivered impressive sonics in the pool and cut through the noise with just a few clicks of the iPod's volume control. Everything from Jake Owen's "Keepin' It Country" to A Day to Remember's "Have Faith in Me" was consistently well balanced, with plenty of bass.

Land Ho

In the gym, on the run, and for general use above water, the Swimbuds Sport headphone with the Mushroom tip didn't quite hit the mark on sound quality. Music loses its punch and feels foggy as it is forced through the tiny 0.07-inch (internal diameter) opening at the tip of the earbud—a design feature that was likely dictated by the need to be waterproof. While comfortable, the Sport/Mushroom combo had trouble keeping up sonically with even the freebie earbud that came with my Samsung Galaxy S5 smartphone; the Samsungs have a

0.2-inch-diameter opening (good luck hopping in for a swim with those in your ears).

Still, for the weekend lap swimmer and even serious triathletes whose swim training is entirely freestyle, Underwater Audio's Swimbuds Sport Waterproof headphone represents a terrific value. At \$70, or \$175 for the bundle including a waterproof iPod, it's a reasonable investment even if you never wear these buds out of the water. We listen to music when we're at the gym, riding a bike, and out for a run, so it's only logical that we would want to rock out while training in the pool. This setup bridges that gap. Even athletes who routinely train all four strokes will find a place for the Swimbuds during warm-up, freestyle

sets, kick sets, and warm-down. And did I mention that these bad boys can also be used in the ocean? As long as you don't dip below 10 feet (where your ears would be unable to equalize due to the airtight seal), you can feel free to catch some waves or snorkel the shallows...with "Margaritaville" on repeat. ♦



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Dirac Deluxe

By Daniel Kumin

Emotiva XMC-1 Surround Processor

PRICE \$2,499

TALAR DU SVENSKA? EMOTIVA does. Enough Swedish, at any rate, for the Tennessee tenderer of direct-to-consumer A/V gear to bake Swedish firm Dirac's speaker/room-correction DSP into its new preamp/processor, the long-awaited XMC-1.

If you'll forgive a Miller analogy, Dirac is to Uppsala University as Audyssey is to USC: Dirac, too, evolved out of original academic electroacoustics research—although USC's weather is better, and I'm pretty sure the Trojans could take the Swedes on the gridiron.

Of Dirac's several scalable DSP technologies for mobile, personal, and in-room audio playback, Dirac Live is the one inhabiting the XMC-1. Its conceptual architecture is quite similar to that of Audyssey's MultEQ XT, with a couple of important distinctions. First, Dirac Live runs on an external computer to perform the initial number-crunching, ultimately downloading the resultant filter coefficients to the preamp's onboard, dual-32-bit Texas Instruments DSP engine. (Emotiva thoughtfully provided me with a Lenovo laptop preloaded with the Windows software, which otherwise must be downloaded; a Mac OSX version is also downloadable.)

Second, and significantly, according to the Swedish tech team, Dirac Live employs "mixed-phase" digital filters, claimed to implement effective impulse (time-domain) corrections as well as frequency-response (amplitude-domain) ones.

AT A GLANCE

+ Plus

- Dirac Live speaker/room EQ
- Highly flexible setup and automation options
- Division I sound quality
- Async-USB DAC input for streaming playback

- Minus

- Only one Dirac curve-set at a time can be loaded
- Requires personal computer for setup; no onboard auto calibration

The mathematics of this are a bit above my pay grade—OK, they're way, way above my pay grade—but the result is said to be improved resolution, imaging, and spatial presentation, along with the expected real-world, in-room frequency-response corrections. (You can experiment with Dirac Live on your Mac or PC in a free trial, available at dirac.com.)

Emotiva equips the XMC-1 with eight HDMI inputs, trios of coax and optical digital ports (plus a single AES/EBU input), and handfuls of analog paths, including a 71-channel analog-direct grouping, but there are no analog video facilities whatsoever—neither component nor composite nor S-video. And there's no onboard video processing: The Emotiva is strictly a 3D/4K-ready HDMI switcher (HDMI v1.4b), a design approach I find perfectly sensible for the 'phile buyer today. In

this market, either source or display (or both) is likely to incorporate adequate processing, should any be desired.

While we're on the topic of HDMI: Emotiva specs the XMC-1's v1.4b ports as fully capable with 30-frame-per-second 4K video and claims they in fact would handle 60/4K but for the lack of the critical HDCP 2.2 copyright management, for which the implementing chips that Emotiva plans to use are not yet available. The company says that a full HDMI v2.0 (with HDCP 2.2) upgrade will become available, at an unspecified future date (fairly soon, they hope), on a quick-turnaround basis (it's a simple board swap). The upgrade's cost is also still unspecified, but the Tennesseans stressed that it would be modest, and effectively "cost-plus"-priced.

Nine analog channel outputs include dual/stereo subwoofer outs, and all nine are present on both unbalanced RCA and balanced XLR jacks. I used the former; my power amp doesn't supply balanced inputs, and anyway, I don't feel that balanced connection offers any meaningful benefit to short runs.

Setup

Setting up the XMC-1 was a pleasure, at least after I received a

second, properly functioning unit from Emotiva. The first they sent me, apparently invested by the unquiet shade of the late Harry Pearson, who despised all things digital, exhibited electronic behaviors reminiscent of that little girl in *The Exorcist*. Oddly, whatever inhabited this unit while in my possession left just as mysteriously, as company reps later reported they could find absolutely nothing wrong with it, even after a week of running it steadily.

In any event, the XMC-1's setup system itself is workmanlike: The large, excellently readable OLED front-panel display is exactly mirrored onscreen, though in a default size small enough to make me crane a bit from my seating location 9 feet away. (You can stretch this, and change colors via the Setup menu, which helps a lot.) Once I got the hang of their grid-concept structure, menus proved perfectly straightforward and mostly self-explanatory. Inputs can be freely associated with connected sources, as well as extensively customized with regard to default stereo and surround listening modes, setup and equalization presets, and more.

The XMC-1 arrives from Emotiva with a license for Dirac Live LE. The full version I tested is a \$99 upgrade, which differs from the LE version by one important attribute: The LE offers a valuable user-definable target-curve capability I'll describe below. It also offers more flexible mic- and channel-gain adjustments, as well as the option to employ a third-party calibrated test mic. Given the XMC-1's



RATING

Emotiva XMC-1 Surround Processor

Audio Performance ★★★★★

Video Performance ★★★★★

Features ★★★★★

Ergonomics ★★★★★

Value ★★★★★

THE VERDICT

A noteworthy addition to the high-end preamp/processor ranks, with Dirac Live a fascinating, must-hear plus.

SURROUND PROCESSOR

EMOTIVA XMC-1 SURROUND PROCESSOR

PRICE: \$2,499

Emotiva • (877) 366-8324 • emotiva.com

\$2,499 price tag, I suspect the \$99 Dirac upgrade box is one many buyers will choose to tick.

The XMC-1 has no built-in auto-calibration routine in the usual sense. Each channel's distance, level, and crossover must be set manually via the menus—though the Dirac Live routine, when you run it, handles the first of these, but only for the Dirac preset (which is one of three). Consequently, I set these parameters the old-fashioned way, via a handheld SPL meter.

Emotiva provides a downmixing second-zone stereo-audio output, along with unusually flexible 12-volt trigger and IR options for system integration. A wired Ethernet connection links the preamp to a home network and thus the Internet—needed for Dirac's software authentication, and for communication between the pre/pro and the local computer running Dirac Live. The Ethernet connection empowers full IP-based control in a third-party setup, but the XMC-1 itself has no onboard Web server.

The Dirac Live measurement and calibration routine requires that you connect the supplied higher-than-typical-quality measurement mic (USB) to the computer; it also requires that the computer and the XMC-1 cozy up on the same network. My standard home network worked immediately, the pre/pro auto-discovering it via DHCP on its wired connection, the laptop doing likewise via Wi-Fi.

With communications established, I booted up Dirac Live on the laptop, which proved nicely self-prompting

and not terribly different interface-wise from Audyssey's system or several others I've tried. One functional distinction is that you must manually adjust the mic input, and individual channel-output gains fairly precisely, before you begin. (But you'll have to do this only once, if you follow instructions well—don't ask me how I know.) Dirac Live takes data from nine mic positions, prescribing quite specific locations depending on your seating layout, which it queries. (That said, my reading of Dirac materials online confirmed that it's mostly the dimensional differences among placements, rather than adherence to specific locations per se, that foment the magic.)

The actual data-collecting routine consists of impulse stimuli, circulating to each channel, for each of the nine positions; once through, the whole routine took me about an hour. With all the data assembled, Dirac Live lets you view plots of the as-found response of each mic position (or averages) for each channel, with the corrected-response overlays, in either amplitude or impulse mode. It's endlessly fascinating if you're geeky enough to crave such info, and I am. Dirac's is the best and most informative such display I've encountered among the half-dozen or so systems I've experienced, and the software is quick and responsive.

As with all speaker/room-correction systems I know of, Dirac Live's filters strive to deliver real-world response fitted to

an idealized "Target Curve." Unlike many other systems, Dirac displays this onscreen, and lets you modify it at will. The XMC-1's out-of-the-box Target Curve tilts downward about 0.5-decibel-per-octave from 100 hertz on up, which largely mirrors what I consider ideal for my system and indeed for most others. You can recalculate your data to a different target (or individual targets by channel) by manipulating curves onscreen, pulling down or up on curve "handles" you click into place, and you can store as many Dirac curve-sets ("Projects") as you like on the computer. However, only one curve-set at a time can be loaded into the XMC-1, which makes comparisons between curves a 5-minute-per-switch affair at the least.

Overall, I found the Dirac Live app pleasantly straightforward and easy to use—once I noticed the tiny "Help" tab *waay* over to the right, which revealed all when clicked. (Is the screen-edge, Where's Waldo help tab a Windows 8 thing?)

Listening and Use

With its big blue display and intensely blue-backlit controls, the XMC-1 lights up like a Christmas tree when you turn it on. Fortunately, all this is dimmable, right down to "off," in the setup options. Since the Emotiva is really a Linux computer in A/V-preamp guise, the unit takes a full 40 seconds to come to life and pass audio and video from a cold start. (There's an optional Video On Standby mode, which passes video and audio to the TV when the preamp is off and thus keeps the OS loaded, making full startup far quicker.)

Once on, the XMC-1 delivers the goods. I'm going to dispense with my non-Dirac listening fairly quickly here to conserve space: In stereo or unprocessed multichannel playback, the Emotiva sounded indistinguishable from my everyday pre/pro. Which is to say, essentially transparent, delivering programming as intended, whether in stereo or in surround. The XMC-1 includes both Reference Direct and "plain" Direct modes, which eliminate or limit processing (including Dirac), as well



as Stereo and All Stereo ("party") modes, which do not. Beyond these, what comes in is what comes out. The XMC-1 offers Dolby TrueHD and DTS-HD Master Audio, and it can employ PLIIx or Neo:6 post-processing to fill in channels missing in the original recording (and also, obviously, to perform matrix-decoding/synthesizing for surround from two-channel programs). Dolby Atmos and DTS:X object-based processing, the latest surround flavors of the month, are absent, perfectly understandable in what is, after-all, only a seven-channel pre/pro. Emotiva says it's reserving Atmos and DTS:X for an upcoming more-channels model under development.

But as far as the listening goes, the real story here is the Dirac Live processing. As a rule, I report on familiar EQ systems like Audyssey's only in brief, but Dirac's, being a debut in these pages, presents a different case.

I spent considerable time comparing the XMC-1's Dirac preset with its direct, non-Dirac Preset 1, which I carefully set with correct levels and distances. And I quickly heard a perfectly distinct difference.

My initial reaction, unsurprisingly, was that the sound was brighter. Why was this unsurprising? Because Dirac, like Audyssey and most every other system I've tried, corrects the room-effect buildup of 50-to-120-Hz energy I well know to occur in my room, as it will in most others. So even casual listening reveals tighter bass octaves, along with the tonal-balance corollary of better-defined and seemingly more prominent midrange and treble.

However, there was certainly more going on than that. With Dirac engaged, reverberations sounded, not louder, but deeper, smoother, or



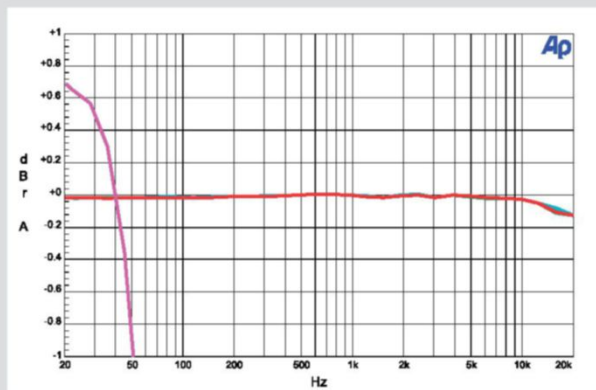
● The XMC-1's front-panel display and blue backlighting are fully dimmable.

Test Bench

Emotiva XMC-1 Surround Processor



See soundandvision.com/TestBench for full lab results and technical definitions.



AUDIO Frequency response at preamp outputs of Dolby Digital decoder: Left (aqua): -0.02 dB @ 20 Hz, -0.13 dB @ 20 kHz. Center (green): -0.02 dB @ 20 Hz, -0.12 dB @ 20 kHz. LFE (purple): Normalized to level @ 40 Hz: $+0.68$ dB @ 20 Hz, upper -3 dB @ 63 Hz, upper -6 dB @ 76 Hz.

Analog frequency response in Reference Stereo mode:

- -0.03 dB at 10 Hz
- -0.00 dB at 20 Hz
- -0.00 dB at 20 kHz
- -0.02 dB at 50 kHz

Analog frequency response with signal processing:

- -0.07 dB at 10 Hz
- -0.02 dB at 20 Hz
- -0.17 dB at 20 kHz
- -11.31 dB at 50 kHz

Response from multichannel input to main output: -0.03 dB @ 10 Hz, -0.00 dB @ 20 Hz, -0.00 dB @ 20 kHz, -0.01 dB @ 50 kHz. Analog THD+N: less than 0.001% @ 1 kHz w 100-millivolt input and volume control set to +1.0. Crosstalk w 100-mV input: -103.30 dB left to right, -103.24 dB right to left. Signal-to-noise ratio 2 "A" weighting: -128.04 dB. —MJP

VIDEO The Emotiva outputs the same resolution as the input; that is, it doesn't upconvert video. That doesn't necessarily mean that such a pre/pro or AVR won't compromise the input source; the signal must still pass through the switching circuitry. But the XMC-1 performed perfectly in that regard, with no issues on our clipping, resolution, and 3D pass-through tests. —TJN

SPECS

Auto Setup/Room EQ: Dirac Live • **Video**

Processing: Analog Devices (HDMI switching only) • **Dimensions**

(W x H x D, inches): 17 x 5.75 x 15.5 • **Weight (Pounds):** 21 • **Video**

Inputs: HDMI 2.0 (8) • **Audio Inputs:** Coaxial digital (3), optical digital

(3), AES/EBU digital XLR (1), stereo analog RCA (4), stereo balanced

analog XLR (1), 71-channel input RCA (1) • **Additional:** USB B digital

audio (1) • **Video Outputs:** HDMI 1.4a (2) • **Audio Outputs:** Stereo

analog (3), 72-channel preout RCA (1), 72-channel pre-out balanced

XLR (1), 1/4-inch headphone (1) • **Additional:** USB A firmware updates

(2), Ethernet (1), FM antenna (1), AM antenna (1), 12-volt trigger (4), IR in

(1), IR out (1)

shall I say, creamier, and perhaps even very slightly longer. Transients also were distinctive. The finger-snaps that open Diana Krall's "My Love Is" clearly demonstrated both a more percussive snap and a richer, longer-seeming reverb tail. On the finger-snaps and on elements such as plucked acoustic guitar, harpsichord, and hi-hat ticks, transient leading-edges seemed highlighted—more prominent and snappy while not actually louder, as if richer in top-octave harmonic content, despite the fact that Dirac rolled off the top two octaves by a decibel or more.

Imaging, too, was different. Dirac shifted the Krall tune's finger-snaps to dead center, from slightly left (where they appeared in non-Dirac playback), and made a perceptible sharpening of image location on a wide variety of recordings. For example, a rich but fairly diffuse rendering of Elgar's Symphony No. 1 (an HDtracks download) enjoyed a noticeably tighter soundstage—which also seemed slightly deeper, and at the same time a bit narrower, or at any rate not wider in proportion.

One unexpected but subtly dramatic Dirac effect was one I simply stumbled across: On an ordinary Red Sox broadcast, the background crowd noise, which normally sounds more like a distant waterfall, became subtly more granular and lifelike, letting me more easily pick out the occasional distinct voice from the general ballpark buzz.

I spent an hour or more with my treasured copy of *The Sheffield Drum Record* (on CD), where Dirac clearly moved the kit into a more convincing and subtly more lively acoustic space—and this is a fairly tight studio recording. But here and throughout, my impression of enhanced brightness that wasn't really brighter remained, and it grew even stronger when invoking Dirac over

multichannel music via Dolby PLII/Music. Enough so that I went back to Dirac Live on the laptop and jiggered my target curves for all five channels, knocking everything down an additional 1.5 to 2.5 dB or so, from 1,500 Hz to 15 kilohertz. Repeating my listening, I heard, essentially, no change at all: The brighter, or perhaps clearer, or more sharply focused sound and the deeper or stronger ambience elements remained. Of course, what acted as a boon on better-quality recordings was not always advantageous on inferior ones like Bruce Springsteen's *Greetings from Asbury Park, N.J.*, where a clearer window onto bright 'n' spitty wasn't necessarily a good thing. Happily, defeating Dirac was never more than a key press away.

Dirac can operate upon discrete-multichannel modes like Dolby TrueHD and DTS-HD Master Audio (though not on direct DSD playback from SACDs, which the XMC-1 also can perform). Interestingly, I found much less obvious impact on movie soundtracks, except on prominent music cues. Dialogue and most ambience effects seemed relatively untouched. My speaker suite is quite neutral, especially through the vocal octaves, which may help to explain this: Little if any response correction is required (or seen, on the Dirac plots) in this range, and dialogue, being monaural

to the center channel, may perhaps be less subject to correction.

There's more to the XMC-1 than just Dirac, of course. Sound quality on straight (un-Dirac'd) movie or music playback was without blemish. (And I noted zero coloration on movie dialogue or TV announcers, centered or stereo, from Dirac engagement.)

The preamp accepts streaming audio up to 192/24 via a rear-panel USB port, so hi-res audio listening is a built-in option, though the XMC-1 has no



● Daniel found the large remote to be a bit unwieldy.

The XMC-1 is an intelligently engineered, fine-sounding A/V pre/pro.

SURROUND PROCESSOR

● **The XMC-1 provides both RCA and balanced XLR outputs.**

and varied shapes make by-feel operation possible, with time). And such custom, metal fabrication can't come cheap; might not an off-the-shelf OEM remote (with backlighting) have shaved quite a few bucks off the MSRP?

One remote key, Loudness, demands special mention. This (or a setup option) transforms the pre/pro's volume control from a simple attenuator to a true "loudness" control. Thus empowered, as it reduces volume from an (unspecified) unequaled reference point, it imposes equalization progressively as the setting declines, to compensate for human hearing's deficiencies at softer-than-real-life amplitudes; this is an outstanding design concept. (Autobiographical note: We incorporated exactly this sort of control action, also optionally, in the Apt/Holman preamplifier, when I worked for that company about a zillion years ago.) Emotiva would get an A+ if they had based it upon more modern loudness studies (S. S. Stevens) rather than the familiar but outdated Fletcher-Munson curves they referenced. Still, it's a back-to-the-future, honestly real-world-useful, feature. Bravo!

OK, I'm out of space and time—as you might have said Paul Dirac, the English quantum physicist for whom the Swedes may have named their company. So here's the executive summary: Emotiva's XMC-1 is an intelligently engineered, fine-sounding A/V pre/pro with quite a few clever extras, almost all of them contributing genuine value in enhancing the audio or user experience. Its marquee feature, Dirac Live, seems to me to have real worth to those prepared to delve deeply and carefully enough to glean it. In all frankness, this issue's short publication cycle has kept my own explorations fairly close to the surface so far, but Dirac definitely has my attention.

As does Emotiva, for the XMC-1 surround processor. It's a high performer and an honest high-end value. ♦



music-server client functions of its own, working simply as a conventional asynchronous USB-DAC/preamp. (Direct DSD playback via USB is not supported—firmware update, anyone?)—but my DSD library played fine once converted to PCM by my Mac's software player.

My other stereo hi-res tracks from my iMac streamed as well, though neither my software players' "talkback" display nor the XMC-1's own display ever showed a sampling rate greater than 48 kHz, despite playing files designated at 88.2, 96, or even 192 kHz. I initially took this to mean the Emotiva was decimating everything to 48 kHz (except native 44.1 stuff, which played at 44.1 kHz), and I could discover no setup option or control to manage this.

Emotiva's in-house expert eventually became convinced that my long 16-foot USB cable was screwing up communication between my computer/player software combo and the C-Media CM6631A chip inside the XMC-1, which is said to be sensitive to timing that's affected by cable length and the architecture of USB ports. In my case, it was surmised, the unsuccessful "rate-negotiation" suggested to my software that the XMC-1 was only a modest one-bedroom in the low-rent district instead of the high-end villa on the Riviera that it really is, so the player would send only the best quality it thought the pre/pro could handle. Emotiva recommends keeping USB cable length to two meters max, but the best I could do with my physical setup was swap in a 12-footer, which offered no improvement. Nor did switching the player software from Audirvana to any of several others I have resident. In any event, I've never had this issue before with any direct connection of my Mac (running OSX 10.9) to any DAC; the same cables

running to a Micromega MyDac results in successful playback up to the maximum specified 96 kHz. Be warned.

This is as good a place as any to observe that, besides its automated Dirac corrective equalization, the Emotiva's two additional memory registers each store an 11-band parametric arrangement for every individual channel, all 7.2 of them, with each band having independent adjustment of frequency, boost/cut, and Q (bandwidth/shape). This is a lot of processing firepower, enough for any of us to make things almost certainly worse by fiddling by ear and eye. Emotiva conceives these as mostly useful to the seriously techno audiophiles who wish to run an independent (non-Dirac) speaker/room-correction application, such as the popular Room EQ Wizard—or even perform measurements the old-fashioned way with SPL meter, pad, and pencil—and then enter the derived parameters manually. For those Luddites, the XMC-1 even incorporates built-in pink-noise and sine-wave signal generators.

Of more practical use, in my view, Emotiva endows the XMC-1 with unusually flexible tone controls, which can be applied globally or by individual input. Better still, Emotiva puts Center-Surround-Sub-Back channel-level trims—each with gloriously dedicated, hardware up/down key pairs—right on the XMC-1's big remote, where they belong. Such rapture! These offer 0.5-dB adjustability and re-zero with each input change, a sensible, simple design expedient.

Emotiva claims the XMC-1's front-panel headphone output is an amply powerful, high-quality circuit, and my listening seemed to confirm this. Thoughtfully, a completely independent set of channel-level and

tone-control settings is recalled when you plug in the cans. And the XMC-1's 12-volt-trigger-setup matrix even includes headphone presence (physically sensing a plug in the jack) as an option, enabling auto-powering-down of amps, or any other trigger-induced automation you can dream up. (These guys had their thinking caps on.) However, all multiband EQ processing, whether Dirac or manual, is defeated with 'phones connected. The mandate for the Dirac defeat is obvious, but likewise locking out the manual-EQ presets mystifies me; how cool would it be to have high-performing stereo-11-band PEQ to season your personal listening space to taste?

Lest I forget, the XMC-1 is a tuner-preamp, with onboard AM/FM reception and RDS display (but not HD Radio). And while it's no dx-ing record-setter, the tuner doesn't suck.

The remote that Emotiva supplies with the XMC-1 is a big, heavy, imposingly machined metal handset. It's nicely laid out, with sensible key groupings and generous spacing. And there are lots of dedicated key pairs: In addition to the aforementioned and much-loved-by-me level trims, there are tuner seek, preset, and tune up/down pairs, as well as listening-mode, input, and (of course) volume, plus the usual four-way cursor grouping, and dedicated direct-access buttons for eight inputs.

The remote isn't perfect, though (even if its magnetically secured rear battery cover is undeniably cool). I understand the high-end imperative for specialness, but I found the metal remote too heavy for comfortable single-handed ops, and there's no lighting at all, a challenge in a home-theater environment (though the wide key spacing

● **You'll need a computer to run Dirac Live with the XMC-1.**



So far, Dirac definitely has my attention.

Oops, They Did It Again

By Kris Deering

JVC DLA-X500R 3D D-ILA Projector

PRICE \$5,000

LAST YEAR, I WENT TO THE 2014 CEDIA EXPO hoping to see some new native 4K projector options from JVC, but unfortunately, I came away disappointed. For the first time in recent memory, JVC decided to skip the annual model refresh and stick with their already superb 1080p projector offerings. This is understandable, given the embryonic state of the 4K market (and other variables that I'll talk about below). But the line's extra longevity did give me the chance to review what I believe to be the best overall option in JVC's current family, the DLA-X500R. This projector may not have all the bells and whistles of its higher-priced brethren, but it does have what some would call "all the right junk, in all the right places."

A Diamond in the Rough

Last year, I reviewed the DLA-X700R (*Sound & Vision*, June 2014 and at soundandvision.com), and I've been using it as my reference projector ever since. It has performed just as solidly as I said in the review and continues to be my favorite projector to date. That aside, I would be more than happy to move to the DLA-X500R, simply because it delivers all the performance of that higher-end model while giving up

AT A GLANCE



Plus

- Performance close to higher-end models
- Excellent dynamic iris



Minus

- HDMI slow to lock onto signals
- Annoying gamma tracking after 100 hours

only a few features that I honestly don't really need. The DLA-X500R looks identical in most regards but lacks the piano black finish, offering a matte finish instead (goodbye, fingerprints!); it also lacks the auto lens cover. Everything else appears to be the same. You'll find the same pair of HDMI inputs (version 1.4b) as well as an Ethernet connection, a link for an RF 3D adapter, and an RS-232 connection. A simple keypad gives you basic operation of onscreen menus if you feel like ditching the remote.

As we saw on the DLA-X700R, the HDMI inputs accept native 4K video signals, but this still isn't a native 4K-resolution projector; the current generation of JVCs only implements the company's e-shift technology to increase the number of apparent pixels while still using native 1080p D-ILA display chips.

Within that limitation, the JVC will accept an Ultra HD input at a resolution of 3840 x 2160 and a frame rate of 24, 25, or 30 hertz. However, at the higher and more desirable

50- or 60-Hz frame rate, HDMI 1.4b can only pass a 3840 x 2160 source at a color resolution of 4:2:0.

Ultimately, this may not turn out to be much of a concern because 4:2:0 is rumored to be the likely color resolution for the upcoming UHD Blu-ray format, and it's unlikely that any other UHD consumer delivery system will do better.

On the other hand, and as we have reported before, the real roadblock to future UHD content will likely be the lack of HDCP 2.2 support, which I suspect is the reason why JVC decided to forgo releasing new projectors at the end of 2014. HDMI chips that support the full bandwidth capability of the HDMI 2.0 spec plus HDCP 2.2 copyright management are only just now appearing on the market, so even product released at the beginning of this year would have been crippled.

The DLA-X500R features the exact same sixth-generation 1080p D-ILA panels that the DLA-X700R does, with a claimed 40-percent reduction in pixel gap and improved contrast and brightness. I saw the same tremendous performance from this review unit as I see with my reference projector, despite the rather sizable \$3,000 price difference. In fact, the only difference I saw in the everyday use of the DLA-X500R compared with my reference projector was the lack of a few video presets, most notably the DLA-X700R's excellent THX mode, which is very close to accurate right out of the gate. But even without this feature, I was able to dial the projector in to near perfection out of the box, with only some annoying gamma performance cropping up around the 100-hour mark on the bulb.

Showtime

I got to use the DLA-X500R for about a month before I started writing this review. In that entire time, I never once missed my DLA-X700R. I set up the DLA-X500R to perform every bit as well, with only the most minor hit in native contrast performance—which, I dare say, wasn't even visible while viewing content, despite the numbers.

During the time I had, I took in lots of native 1080p content fed from my



● The DLA-X500R has the same looks as last year's DLA-X700R.



RATING

JVC DLA-X500R 3D D-ILA Projector

2D Performance ★★★★★
3D Performance ★★★★★
Features ★★★★★
Ergonomics ★★★★★
Value ★★★★★



THE VERDICT

The combination of the DLA-X500R's performance and value make it a favored pick in JVC's current line.

PROJECTOR

JVC DLA-X500R 3D D-ILA PROJECTOR

PRICE: \$5,000 (3D glasses, \$180 ea; RF emitter, \$100)

JVC • procision.jvc.com



Oppo BDP-103D universal disc player and even some gaming on my PS4. All images were viewed on a 120-inch-diagonal Stewart Filmscreen StudioTek 100 screen (measuring 16:9) in a completely light-controlled environment. For the bulk of my viewing, I left the Intelligent Aperture—JVC's name for their dynamic iris—in the manual position with it fully opened. This gave me my desired image brightness of 14 foot-lamberts while still providing more native contrast than any other projector I've ever used, short of my current reference and did use the Auto 2 setting of the Intelligent Aperture's dynamic mode (more on this below) for exceptionally dark material; most of the time, however, the manual mode delivered all the contrast I needed, and I didn't have to worry about the few and far between instances where some color shifting or clipping was seen as a result of the iris.

The highlight audition for me was definitely the Blu-ray Disc of Luc Besson's latest, *Lucy*. As a whole, the movie is interesting, if a bit hit or miss from a cinematic standpoint. But there was no denying the absolutely stunning photography and reference-quality transfer from Universal, which I would easily rate among my top five for all-time best Blu-ray transfers. Shot with Sony's

latest 4K video camera, the movie is absolutely razor-sharp, with incredible color and contrast. And the DLA-X500R was fully up to the task, with some of the sharpest video I've ever seen, and its high native contrast provided a nearly three-dimensional image at times.

Another stunner on the DLA-X500R was Lionsgate's release of *John Wick*. This was one of last year's guilty pleasures, with incredible action and some great dark humor. It's also a film that has a lot of darker imagery where the ability to reproduce shadow detail and great contrast are imperative. The DLA-X500R was the perfect fit, with exceptional black performance and the same fine detail I saw in *Lucy*. Maybe I've just been lucky, but it seems like the last few JVC projectors I've reviewed or owned have all delivered crisp imagery with no chromatic aberration issues, fringing, or convergence problems—just tack-sharp images.

When I checked the DLA-X500R's 3D playback, I got what I expected: essentially identical performance to the DLA-X700R. As with the higher-priced model, the 3D emitter and glasses cost extra, \$100 and \$180 each, respectively. As I noted in my review of the DLA-X700R, 3D crosstalk (that is, ghosting) was nonexistent on some content, and

ranged from slight to more noticeable on my usual 3D torture tests. It was definitely better than JVC's prior generation of projectors, but hardly ghost-free (as you might get with some DLP projectors).

JVC was also nice enough to lend me a Redray 4K player with a selection of 4K content, all shot with Red's cameras. They lent me one last time around for the DLA-X700R review, but this player had newer demo clips, including some dazzling outdoor photography. Despite some minor hiccups from the HDMI connection, the 4K imagery was jaw-dropping, with startling detail and contrast. Granted, this 4K content probably won't match up to what we're expecting from the UHD Blu-ray format, with its increase in not only resolution but also bit depth, color gamut, and other hopefuls like high dynamic range and frame-rate support. Still, the clean, higher-resolution imagery did provide some incredibly clear eye candy on this 1080p projector that has made me anxious to dive into UHD.

Last year, I waxed on about JVC's biggest buzz feature for that model year, the aforementioned Intelligent Aperture. It is the brand's first dynamic iris, used for extracting the very last bit of contrast these units are capable of. Thankfully, the DLA-X500R's iris is every bit the

equivalent of what you get from the higher-end offerings and also gives you the ability to dial in your peak white or static contrast using the manual option. I'd still like to see JVC refine the dynamic iris performance a bit, though. It's a tad aggressive, with some scenes of low-to-mid-level brightness leading to some minor crushing of white highlights or colors. This is an anomaly I see with almost all dynamic iris systems. If the folks at JVC dialed its action down somewhat, I'd find it more useful. It might then nudge their projector's already stellar contrast ratio to a truly spectacular level.

I was also worried that the trimmed-down price of the DLA-X500R would take its toll in calibration options. The projector does lack a number of video modes that the higher-priced models include, but, as noted earlier, the only one missing that I felt could really add value is the THX preset. Most of the other modes apply a color filter that allows for wider gamuts, but those gamuts aren't really needed for any content on the market today, and the filter actually robs some brightness from the image when used.

Nonetheless, even without a THX mode, I was able to dial in a very accurate image with nearly dead-on colors and a spot-on grayscale by starting in the User 1 preset and Standard (not Wide) color space mode. I've been a big fan of JVC's latest lamps' ability to keep their light output pretty stable over a very long period of time, though I'm concerned about the consistency of the gamma performance. On both my DLA-X700R and this DLA-X500R, I began over time seeing some pretty dramatic shifts in gamma that made it harder to calibrate. Older JVC models offered a 10-point gamma calibration system that would have helped dial in the luminance levels



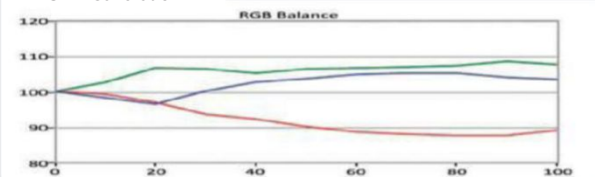
● The DLA-X500R comes dressed in a smudge-resistant matte finish.

TEST REPORT

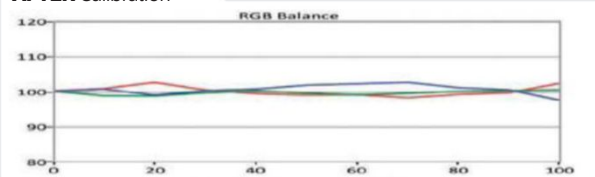
Test Bench

JVC DLA-X500R 3D D-ILA Projector

BEFORE Calibration



AFTER Calibration



THE measurements given here were made using SpectraCal CalMAN measurement software version 5.4.2.

FULL-ON/FULL-OFF Contrast Ratio: 400,000:1

ALL of the measurements were taken with the projector in the User 1 preset with the lamp in low and the Standard color space selected. The gamma correction preset was selected as Custom, with the preset of 2.4 used as a base. All of the calibration was done with the lens aperture in 0, the Intelligent Aperture disabled; the contrast ratio measurements were done in a variety of different modes for the aperture as noted. The lamp had 101 hours on it during the calibration. All viewing and off-screen measurements were done on a 120-inch-diagonal Stewart StudioTek 100 screen (1.0 gain).

THE full-on/full-off contrast was measured with a Minolta T-10 meter from 4 inches away from the lens face. I tested various configurations in both high and low lamp mode with the lens aperture in various conditions. The highest native contrast ratio with Intelligent Aperture disabled was obtained with the projector in low lamp mode with the aperture fully closed (–16). The highest contrast ratio achieved with Intelligent Aperture disabled was 84,000:1. Using the Intelligent Aperture in Auto 2 mode resulted in a peak contrast ratio of 400,000:1 in High Lamp mode. Note that with the Minolta T-10 meter used, a single-digit difference with low-level measurements results in a difference of nearly 100,000:1 in contrast, so these numbers are not absolute. They were repeatable, but measuring black levels this low results in a pretty large margin of error even with the meter tolerances. I could have also achieved a higher contrast ratio if I'd clipped the digital white value at reference white (digital 235) instead of peak white (digital 255). The user setup plays a huge role in what type of contrast performance you can expect to see out of this, or any other projector.

RGB color points and grayscale tracking out of the box were very good but not quite as spot-on as the DLA-X700R I reviewed last year in the THX preset. I had a hard time getting the gamma where I wanted it, and the lack of a 10-point gamma adjustment made it a frustrating endeavor to get a good track through the midrange values. While out-of-the-box tracking was excellent, near 100 hours the projector needed a lot of work to give me the results I wanted.

THE color gamut in the Standard (not Wide) setting was quite good, with only some mild issues with blue, cyan and magenta. The DLA-X500R does have a decent CMS system that allowed for some minor tweaks to get all of the Delta Es under 3 with little work. Luminance and saturation tracking were generally excellent, with blue being the only color that wasn't dead on. Thankfully, this is the color we are the least sensitive to. I don't think it matters anyway as the total Delta E numbers even for blue were less than 3 when all was said and done.—KRD

SPECS

Dimensions (WxHxD, Inches): 17.9 x 7 x 18.5 • **Weight (Pounds):** 32.3 • **Replacement Lamp:** \$500 • **3D Glasses:** \$180 ea • **RF Emitter:** \$100 • **Video Inputs:** HDMI 1.4b (2)



● A pair of HDMI 1.4b inputs and an Ethernet connection are on board.

through the mid-grayscale range to where they needed to be, but the new setup only gives you the option to tailor the top and bottom ends, which made it difficult to get the most out of the projector. I could still get it pretty close with lots of trial and error, but I'd love to see JVC and other projector manufacturers move to a 10-point parametric grayscale/gamma adjustment, similar to what some flat-panel HDTVs offer. But this also brings up another big win for the DLA-X500R: The money you save over the higher-end models is enough to add a high-end video processor like one of the models I reviewed previously from Lumagen and DVDO (see soundandvision.com). These would give you the tools to make these calibration issues moot over the life of the projector.

Don't Rest on Your Laurels

I'll be honest: This last batch of JVC models has delivered performance that has reached the level where I'm stretching to find things to nitpick. Picture quality has gotten so good that it would satisfy even the staunchest videophile in almost every respect. Images are incredibly crisp and have excellent contrast, depth, and pop. But I wouldn't say their work is done. HDMI stability and the speed with which the projector locks onto a video signal are still a clear step back from what I've seen on the latest models from Sony and Epson. The same goes for the level of fan noise in the high lamp mode. Models from competitors are not only brighter overall, but their higher lamp modes

deliver sound levels that are more in line with JVC's nearly silent low-lamp modes. With 4K on the horizon, people are going to be more and more enticed by bigger screens to take advantage of it, and JVC will need to step up their lumen output to light those screens. I personally hope we'll see them move toward solid-state lighting options like laser-based projection; considering that their professional market offerings feature laser projectors, I have my fingers crossed that we'll see this sooner rather than later in consumer models. I had the chance to view Epson's new laser projector, and I was quite pleased with what I saw, but it still didn't have the contrast and pop that the DLA-X500R delivered at half the price.

The folks at JVC may not like me much for this, but I feel the DLA-X500R is the projector to beat in their current lineup. Sure, the native contrast isn't quite up to snuff with the higher-end models,

but at these levels, I don't think the big boys' increases are enough for dramatic differences in real-world viewing—and the dynamic iris makes this a moot point anyway. Slick auto lens covers and cosmetics may win over a few buyers, but I'm a pure performance connoisseur, and the DLA-X500R delivered there in spades. I can't think of anything at this price point (and only a few projectors at higher prices) that I'd recommend more for overall performance. JVC has raised the bar quite high with this value leader, and I'm really hoping we'll see it topped later this year. Until then, this is the one to own. ♦



● JVC's remote offers direct picture mode access.

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Behemoth Backyard Bijou

By Darryl Wilkinson

OutStandingScreens OSS Drive-In 16 Outdoor Projection Screen

PRICE \$549

NOT EVERYONE IS AS KEEN ON outdoor televisions as I am. In fact, most people with whom I've discussed the subject have walked away convinced that I was a blithering idiot—or, at least, more of a blithering idiot than I'd previously proven myself to be. On the other hand, the folks who've had the chance to watch a movie or a playoff game on one of the outdoor TVs I've tested over the years have invariably come away from the experience with a totally different (ahem) outlook. For those of us who have watched TV *au naturel*, there is nothing ridiculous, extravagant, or abnormal about it. It's just one heck of a good time.

There's something about the nature of an outdoor TV setup that gives watching one a festive air, and as is often the case with get-togethers, the excitement grows as the number of people increases. (Even golf might—I said *might*—be entertaining if you could convince six or so people to watch it with you outside.) Of

AT A GLANCE

+ Plus

- Stupidly simple setup/takedown
- Machine-washable screen material
- Front- or rear-projection configuration

- Minus

- Thin (though strong) aluminum poles

SPECS

Dimensions (WxH, Feet):

16 x 9 (220 inches diagonal); assembled, 16 x 11.25

• **Weight (Pounds):** Less than 20 with carry case

screen—around twice the diagonal of the screen in my home theater. With a screen this size, you don't need to landscape your backyard to accommodate stadium-style seating.

You'd think that shipping a screen this ginormous would require a packing crate and an obscene freight upcharge, but the screen, posts, and other setup hardware—including a heavy-duty 30-foot tape measure and an equally manly, 1-pound rubber

RATING

OutStandingScreens OSS Drive-In 16 Outdoor Projection Screen

Performance ★★★★★
Features ★★★★★
Build Quality ★★★★★
Value ★★★★★

mallet—arrive at your doorstep in a cardboard box that's 6 x 6 x 72 inches. Inside the carton, the parts and pieces for the screen come stored in a well-designed canvas carrying bag that even includes pockets for the stakes. In all, the bag and parts weigh around 20 pounds.

How is it possible that a complete 220-inch screen can fit into such a convenient storage/carry bag? It's because the OSS Drive-In 16 screen sets up similar to the way a backyard badminton net does, using aluminum side poles (measuring 11 feet, 3 inches tall) that slip into fabric channels sewn into the left and right sides of the screen. Each pole is composed of two shorter sections that insert one into the other, which is why the entire kit can fit into a 72-inch-long carry bag. Two pre-installed eye bolts near the top and middle (approximately) of the assembled poles are already pre-threaded with adjustable, red anchor ropes, which get attached to bright-orange, plastic ground stakes (four per side), each measuring 11 inches long x 2.5 inches wide (at the top).

A Breeze to Set Up, but Not in a Breeze

Setting up the screen is stupidly simple. After using the included tape measure to mark spots for the poles

course, the larger the screen, the more people you can fit in front of it. I discovered that fact some years ago when I backyard-movie-party-tested a 72-inch inflatable projection screen that, at the time, seemed enormous—and enormously fun for everyone there. In retrospect, after receiving the OSS Drive-In 16 Outdoor Projection Screen from OutStandingScreens, that old blimpish, jolly 6-footer seems more cartoonish than bijou-esque.

Ginormous but Compact

There are several things that make this screen, if not unique, at least quite unusual, the most obvious of which is its size. The screen real estate measures an impressive 16 feet wide x 9 feet tall. (Give yourself half a point if you can guess the aspect ratio without using a calculator.) In layman's terms, that's a 220-inch-diagonal

● The 16 x 9-foot screen measures 220 diagonal inches.



● The OSS Drive-In can be used in a front- or rear-projection configuration.



THE VERDICT

Affordable, easy to set up, and convenient to transport, this huge screen has an awesome picture and provides more fun than just about anything else you can do outdoors with your clothes on. What more could you want?

that are equidistant from the projector (oh, yeah, you'll have to supply your own projector...damn...), you pound in the stakes at various points that are 8 feet out from each pole's intended location. After looping three of the support ropes around each one's individual stake, you use the fourth rope to pull the pole in place before looping that rope around its stake. Then you repeat with the other side. It can definitely be done by one person, although it's easier with two people—especially in breezy conditions, since the screen acts like a 16-foot-wide sail. After the first time, most people should be able to set up the screen from scratch in less than 20 minutes. If you regularly set up the screen in the same place, you can save time by installing a permanent group of support stakes; keep the original stakes in the bag for use in alternate locations. You can visit the company's Website and click the YouTube link to see a video of the setup procedure.

OutStandingScreens says the whole thing is made in the U.S., and in addition to being mold-resistant and fire-retardant, the cloth screen material is machine-washable (cold water, cool dry). That's extremely important because there's no doubt that even the most fastidious setter-upper is going to get dirt and/

or grass stains on the screen at some point. There's also the fact that a screen of this size will make an irresistible target for any bird within 10 miles.

The company points out that, unlike inflatable screens, the OSS Drive-In doesn't require electricity—which means that even though you'll obviously need power to run the projector and source component(s), you won't have to worry about an additional extension cord (with the additional tripping and shock hazards) for the screen. Another advantage the OSS Drive-In has over most other outdoor projection screen setups is that it can be used for front- or rear-projection configurations. That's an important aspect because having rear-projection capability, especially if you have a short-throw projector, expands your placement options and offers the possibility of getting the projector/source/cords totally out of the way.

Not as Good but Better

In order to go as portable as possible, I asked BenQ to send a sample of one of their HT1075 projectors (review at soundandvision.com) along with a matching Wireless Full HD Kit. This meant that, as long as I stayed reasonably close to the house, I could access two source components in the rack in

SCREEN

OUTSTANDINGSCREENS OSS DRIVE-IN 16 OUTDOOR PROJECTION SCREEN

PRICE: \$549

OutStandingScreens • outstandingscreens.com



● **The screen comes with a well-designed carry bag, and fully loaded weighs less than 20 pounds.**

look at the projector's onscreen menus! Once I started playing *Gravity*, a movie meant for the big screen if ever there was one, they were hooked.

Would the image have been better if I'd used a 4K projector to project the 220-inch image? Yes. Did the picture quality match what I'd get from the BenQ HT1075 on the 110-inch Screen Innovations screen in my home theater? No. Did I, or anyone else watching, notice or even care? Absolutely not. The great outdoors isn't a place you go to find reference-quality video—or audio, for that matter. But even without those caveats, there was no reason to apologize for the picture quality, either.

Conclusion

What this \$549 screen provided was a truly outstanding-looking and thoroughly exciting outdoor theatrical experience, one that would cost a lot more to create by other means. While the affordability is important, the screen's most significant aspect is its ease of setup. Being easy to use means it's more likely to be used, over and over. In fact, it's so easy that choosing which movie to rent/stream will probably be the more difficult chore. In my opinion, that increases the value of this screen immensely. I've always been a fan of outdoor TVs, and the OutStandingScreens OSS Drive-In 16 Outdoor Projection Screen just made me an even bigger fan. ♦

● **A system of poles and ropes supports the screen while set up.**



The Great Outdoors

By David Vaughn

NEAR IG 6 Outdoor Speaker System

PRICE \$4,656 as reviewed

AS A HOME THEATER DIE-HARD, I spend way too much time indoors, regardless of the season. But my wife encourages me to get my vitamin D whenever the weather is nice, and there's nothing like spending a leisurely Saturday afternoon lying by the pool while listening to music or some San Francisco Giants baseball. I've had an outdoor speaker system installed for the last 15 years. I think those speakers cost me under \$1,000 (including amplification), and whereas they sounded great when new, they've gotten progressively worse as the years have gone on—even though I uninstall them in the winter to keep them from getting waterlogged when the rainy season hits. This isn't a knock on the unnamed company that made my outdoor speakers; it's just an acknowledgement of what happens when drivers bake in the California sun and have cheap "all weather" plastic enclosures.

NEAR (New England Audio Resource) was founded by Bill Kielytyka, a former engineer with the speaker company Bozak, which was known for its innovative curvilinear aluminum speaker cones. Bill left Bozak in 1988, started NEAR, and designed its first product, the outdoor AEL-2.0 (All Environment Loud-speaker), featuring an aluminum cone woofer. The AEL series was a huge success and was featured in Universal Studios theme parks as well

AT A GLANCE



Plus

- In-ground installation allows the speakers to almost disappear
- Incredibly clear audio at high, and low, volume levels
- Designed to last in any type of weather



Minus

- Expensive
- Back-breaking work to install permanently

as atop New Hampshire's Mt. Washington, one of the harshest environments in the continental U.S. As time has gone on, NEAR has continued to evolve its products and has developed a new line of outdoor speakers, the in-ground IG series, which promises full-range performance in any environment without sacrificing sound quality. That's quite a claim, but can they back it up?

Design Matters

Designing a speaker for outdoor use isn't as easy as it may seem. First, it can be incredibly noisy outside, especially if you happen to live near a small airport (as I do). Furthermore, when you're outdoors, you don't have the benefit of room gain, which can influence the way a speaker sounds. Some speaker manufacturers like to tout that they take their indoor speakers and adapt them for outdoor use, but when you take the innards of

an indoor speaker and house them in a plastic enclosure (reinforced or not), the sound quality will change—and in many cases, it will be a step backward.

This is where NEAR enters the picture. When designing their IG series, they had two key goals in mind. First, the speakers must sound great at any reasonable volume level, and second, they must endure the rigors of an outdoor environment.

The IG series has a unique look. At first glance, the speakers resemble the eggs from *Alien* with some ridges along the sides. But don't worry: Some face-sucking beast doesn't fly out when you fire them up for the first time. There are three different models of main speakers, the IG 5, IG 6, and IG 8, offering 5.25-, 6.5-, and 8-inch woofers, respectively, and each having a 1.1-inch tweeter. NEAR sent me a pair of IG 6s for this review.

RATING

NEAR IG 6/IGS 12 Outdoor Speaker System

Performance ★★★★★

Build Quality ★★★★★

Value ★★★★★

Even though the IG 6 is claimed to reach down to a respectable 45 hertz, NEAR recommended and sent a 12-inch IGS 12 passive in-ground subwoofer, which they say reaches down to 32 Hz to enhance the low end. All the IG speakers have an omnidirectional design—they directly radiate evenly in a 360-degree soundfield. Some other speakers may use a curved plate or inverted funnel in front of the drivers to bounce the sound in multiple directions, which often colors the sound. And many outdoor speakers radiate in only one direction, creating multiple hotspots in the yard, which is a problem I've had with my prior speakers.

While the speakers look and sound great when they're free-standing, NEAR recommends that you partially bury them in the ground, for two reasons. One is improved sound quality, due to the dense earth surrounding the enclosure, which reduces enclosure resonances. The



This system's bass response is impressive.

THE VERDICT

A speaker system designed for the rigors of outdoors with the performance of high-end indoor loudspeakers.

● The outdoorsy brown finish makes the NEARs unobtrusive.



other reason is added security. If the bad guys want to steal your new speakers, they're going to have to bring shovels and picks and be willing to perform some manual labor to uproot them from the ground. Given the price of the speakers—\$779 each for the IG 6 and \$1,599 for the IGS 12 without a companion amplifier—that's something to think about.

It's obvious some serious engineering prowess has gone into the design of these speakers. It starts with the enclosures, which are fabricated from Linear Low-Density Polyethylene (LLDP), a polymer that



resists moisture, dirt, chemicals, and paint from sticking to the surface. UV-inhibitor pigments are embedded throughout the material, so the sun shouldn't fade the color, and if you accidentally hit one of the speakers with a garden tool, you won't have an eyesore in your yard.

The ribs on the sides of the IG series serve to stiffen the enclosure and break up panel resonance. The grille is powder-coated stainless steel, and a hydrophobic fabric covers the drivers to shed water and prevent debris buildup.

Yes, the speakers look pretty in the yard, but it's what's on the inside that counts. First, the basket material of the woofer is designed out of cast aluminum, which makes it strong, corrosion-resistant, and also non-magnetic. Typical outdoor speakers use plastic baskets; plastic is great for its anti-corrosion properties, but it breaks down under heat and turns brittle when cold—not a good combination for longevity in the great outdoors.

The IG series woofers utilize what NEAR calls an Upside Down, Inside Out (UDIO) motor structure, with powerful magnets positioned inside the voice coil former. The Upside Down part is the inverted-cone woofer diaphragm, designed to shed water and provide even dispersion. The Inside Out refers to voice coils wound both inside and outside the aluminum former. Double windings help to increase linearity, power handling, and efficiency.

The speakers use NEAR-patented Magnetic Liquid Suspension (MLS), an advanced high-magnetic-density, low-viscosity ferromagnetic fluid. This replaces the usual mechanical spider found in traditional drivers. It allows the voice coil to remain centered and operate with longer cone excursions, and it promises more consistent long-term performance. Bass response of the system is impressive, which is readily apparent the first time you hear these speakers in action.

Last, the woofers and tweeter

diaphragms use materials specifically designed for outdoor use. NEAR's Metal Diaphragm Technology (MDT) alloy cone is ceramic-hardened aluminum with thin sheets of soft rubber applied to the rear to dampen higher-frequency resonances. The tweeters utilize titanium diaphragms and are suspended with UV-resistant rubber-like material, similar to that used for the woofer surrounds.

The IGS 12 subwoofer is similarly designed, and by adding one to the system, you cover the last half-octave of bass that really makes a difference when listening to music. It shares many functional similarities with the IG series full-range speakers—MLS suspension, MDT cone, UDIO motor structure, and its enclosure is made from the same LLDP material. The subwoofer cabinet is a compound design: The 12-inch driver is sealed in the bottom half of the enclosure, with the woofer firing into a vented chamber so that the sound can escape above ground when buried.

You can terminate the speakers by either of two methods—a typical 8-ohm connection (positive and negative) or a 70-volt connection (most often found in commercial sound systems). The advantages of using a 70-volt amplifier include the viability of smaller-diameter cabling and the ability to connect many speakers in parallel to the same amplifier channel. I chose 8-ohm for my application since I already had speaker wires running to my equipment rack.

For powering the speakers, NEAR sells an optional 600-watt-per-channel stereo amplifier, the 6XL (\$1,499), which they also sent for this review. It's a truly impressive beast that can drive either 70-volt or 8-ohm lines, and the stereo inputs have level controls and switchable High Pass/Low Pass filters. The Low Pass filter incorporates subwoofer EQ contouring for bass boost below 40 Hz. Input options include both RCA and XLR jacks. The amplifier knows whether you hook up in 8-ohm or 70-volt mode, so there are no switches to flip. Under 70-volt

operation, you could have up to 30 speakers, simply wired in parallel, operating at up to 16 watts each.

Cooling of the 6XL is accomplished with oversized heatsinks inside the chassis and with dual variable-speed fans that apply the proper amount of air flow depending on the power load. NEAR had to send me a second 6XL because my first sample had a noisy fan that most likely had been damaged in shipping, but thankfully the second one worked like a charm. The 6XL has an optional sleep mode that will shut the amp down after three minutes of silence and will automatically—and nearly instantaneously—return it to a full-powered state once the inputs detect a signal.

Back-Breaking Work

Installing the speakers wasn't as easy as mounting them on a post, which is how my former speakers were installed. I wanted to find the ideal location to place each one, not only to satisfy exterior décor ideals but also to avoid any underground sprinkler lines. I spent an afternoon moving the speakers around the yard while they were wired above ground until I came up with suitable locations that sounded good and avoided any installation pitfalls. Unfortunately, the best position for the subwoofer had four sprinkler lines directly underneath it, so I had to choose option B.



● The full line includes the IG 8, IG 6, and IG 5 speakers, and the IGS 12 subwoofer.

● Only the top of a buried IG speaker is visible above ground.

● **Top to bottom: Lay the gravel, cover with landscape cloth, bury the speaker, hook up a with direct-burial junction box.**

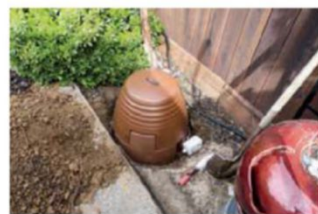


While the speakers were above ground, I auditioned them in stereo using a Parasound Z-amp to power the main speakers and the 6XL to power the subwoofer. I ultimately, on NEAR's recommendation, decided to run the main speakers in parallel

(mono mode) using one channel of the 6XL with the High Pass filter (85 Hz) engaged for the mains, and the other channel with the Low Pass filter engaged for the sub. Apparently, it's not uncommon to run a combined L+R mono signal to all speakers in an outdoor installation, where listeners rarely find themselves settled in the stereo sweet spot and where it's more important to get even coverage over the full listening area. Configuring the system this way resulted in a nominal 4-ohm load on the mains channel of the amplifier and a nominal 8-ohm load on the subwoofer channel, but the 6XL was more than up to the task.

Digging holes is never fun, especially when rainfall in Northern California has been nonexistent for the past few years and the ground is packed hard. In order to install the IG 6 speakers, the holes needed to be about 20 inches wide and deep. NEAR recommends placing 6 inches of gravel underneath each speaker, topped with drainage fabric to put a buffer between speaker and stone. Connections were housed in three NEAR IE-1 Direct-Burial Junction Boxes (\$50 each). My neighbor, Walt, and I spent nearly a full day digging holes, running trenches for wiring, and hooking up all of the speakers.

With everything installed, it was time for some serious listening. I utilized the Zone 2 output on my Marantz AV8802 processor and used various sources for listening, including an Oppo BDP-103D Blu-ray player and a Squeezebox Touch, as well as a Pandora stream taken directly from the Marantz. Thankfully, my Wi-Fi signal reaches my backyard,



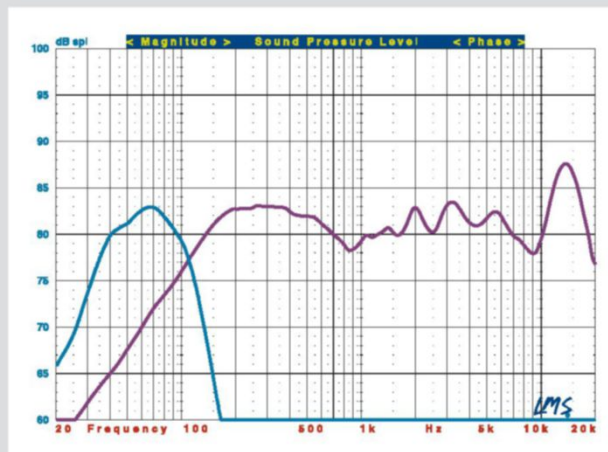
● **Once installed, the IGS 12 could be mistaken for an inverted flower pot.**



See soundandvisionmag.com for full lab results and technical definitions

Test Bench

NEAR IG6 Speaker System



IG6 (purple) +2.47/-3.10 dB, 200 Hz to 10 kHz; -3 dB @ 116 Hz, -6 dB @ 92 Hz; impedance minimum 8.57 ohms @ 20 Hz, phase angle +44.53° @ 594 Hz; sensitivity 81 dB, 500 Hz to 2 kHz.

IGS12 (blue) Close-miked response, normalized to level @ 80 Hz: lower -3 dB point @ 38 Hz; -6 dB @ 33 Hz, upper -3 dB point @ 102 Hz with the 6XL's 85Hz Filter switch set to LP (measured without corresponding EQ, lower -3 dB @ 59 Hz, -6 dB @ 51 Hz); upper -3 dB @ 123 Hz; impedance minimum 8.43 ohms @ 75 Hz, phase angle +30.52° @ 98 Hz.—MJP

SPECS **IG 6:** 6.5 in metal-alloy-cone woofer (1), 1.1 in metal-alloy-diaphragm tweeter (1); 16 x 17.75 in (Diameter at base x H); 13.5 lb • **IGS 12:** 12 in metal-alloy-cone woofer (1); compound enclosure; 23.75 x 19.25 in (Diameter at base x H); 45 lb

so control of all components was accomplished by an iPad using an assortment of apps from the equipment manufacturers for source selection and volume control.

In Use

While experimenting with speaker locations, I was astonished by how great these speakers sounded simply sitting on the ground. When they were running in stereo mode, the separation between channels was distinct and provided pinpoint imaging. The only downfall of running in stereo was that when I got out of the backyard sweet spot, one speaker would end up drowning out

the other. Running them in mono not only fixed this anomaly but also made it possible to use only one 6XL amplifier for the whole three-piece backyard system.

Once the pair of IG 6 speakers and the IGS 12 subwoofer were permanently in place, I noticed a clear



● **The IG's ribs help stiffen the enclosure.**



● The IGS 12 sub is 19 inches tall.



improvement in the midrange, with voices coming to life, and greater depth in the soundstage along with better bass response. Additionally, the omnidirectional design of the speakers works as advertised. As I moved around my yard, the audio was consistently loud, and I experienced a uniform blanket of sound without it being overly loud in any one location.

Run-D.M.C.'s "Walk This Way" (Greatest Hits CD, 2002) is arguably their most recognized song among the masses. This adapted Aerosmith cover features a great, tight bass track, which the IG speakers handled with ease, especially at their very low end. The addition of the subwoofer did make a notable difference in the quality of the music, providing a little more oomph, which definitely enhanced the audio.

The same could be said of Diana Krall's "My Love

RATING

NEAR 6XL Amplifier
Performance ★★★★★
Features ★★★★★
Build Quality ★★★★★
Value ★★★★★



See soundandvisionmag.com for full lab results and technical definitions

SPEAKER SYSTEM

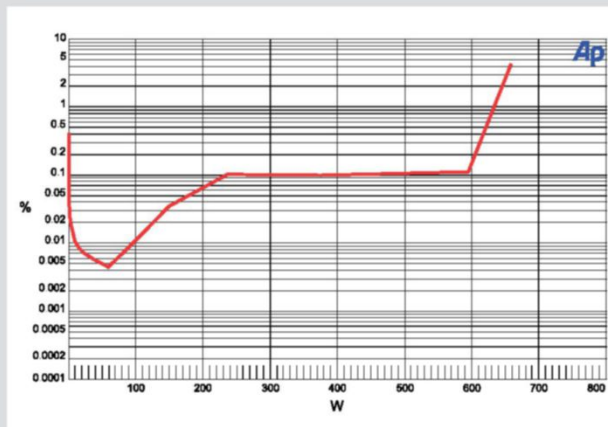
Is" (Love Scenes CD, 1997). The detail that the NEAR speakers spotlighted was amazing for an outdoor space. I could hear the bass player's fingers sliding along the strings, which is something that I listen for when I review high-end indoor speakers, but I didn't expect to be able to hear such intricate detail in an outdoor environment. This was demonstrated further with Helen Merrill's "Quand Tu Dors Pres de Moi" (Paris for Lovers CD, 2005), where I could actually hear the vibration of the saxophone's reed—now that's audio at its finest.

Even listening to San Francisco Giants broadcaster Jon Miller's classic voice on AM radio was an aural treat. His baritone was clear and succinct, sounding as if he was calling the game in my backyard. Furthermore, when I heard the crack of the bat and the roar of the crowd, the sounds put me right into AT&T Park—very impressive indeed.

What really blew me away about the NEAR speakers was that I didn't have to listen to music very loud to appreciate them. Even at low volume levels, the clarity was mesmerizing. That's good—I live in the suburbs, where my neighbors are within 30 feet of me on all three sides of my house, so I can't blast the audio as if I was out in the country. But that's not to say I didn't let loose on occasion to see how loud I could go. Even at high playback levels, these speakers, driven by the 6XL, remained sonically

Test Bench

NEAR 6XL Amplifier



AUDIO This graph shows the 6XL's left amplifier channel, with two channels driving 8-ohm loads. Note that, despite the relatively low output where the amp entered into 0.1% distortion, it hugged that line closely right up to nearly full output. Full details available at soundandvision.com.—MJP

	0.1% THD	1.0% THD
2 Channels Continuously Driven, 8-ohm Loads	235.9 watts	633.2 watts
2 Channels Continuously Driven, 4-ohm Loads	449.7 watts	919.1 watts

SPECS

Power Output: 2 x 600 watts (8 ohms) • **Dimensions (WxHxD, Inches):** 17 x 3.5 x 18.25 • **Weight (Pounds):** 46 • **Audio Inputs:** RCA (2), balanced XLR (2)



clear while belting out some serious SPLs. So if you're into backyard dance parties, you won't be disappointed.

Wrapping It Up

Given its high total system price of more than \$4,600, it's likely this speaker system will cater to the more well-heeled households in our land. But you do get a lot for your money.

The NEAR IG 6 and IGS 12 combo, driven by the 6XL amplifier, is among the best speaker systems I've heard—for either an exterior or interior design. Music comes alive wherever you are in the yard. Furthermore, you don't need to listen at insanely loud levels to appreciate the quality of the sound, something your neighbors will thank you for.

If you're running a standard 8-ohm installation, you might save a few bucks by swapping the 6XL with a less pricey amplifier, though any replacement should have high- and low-pass filters and dedicated trims for each channel, and be powerful enough to drive these relatively inefficient speakers. But you won't go wrong with NEAR's amp, and, as reviewed here, this is one fine system that I can highly recommend. ♦

● The 6XL amplifier can drive either a 70-volt or 8-ohm line.

Even at low volume levels, the clarity was mesmerizing.

Entertainment Reviews in High Definition

BLU-RAY

Birdman: Or (The Unexpected Virtue of Ignorance)



RATINGS

	Poor	Fair	Good	Excellent	Reference
PICTURE	★	★	★	★	★
3D-NESS	★	★	★	★	★
SOUND	★	★	★	★	★
EXTRAS	★	★	★	★	★

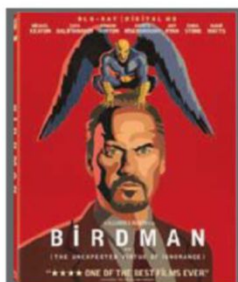


Unexpected Virtues of Flamboyance



Birdman is a thrilling film, winner of the Oscar for Best Picture of 2014 (deservedly so), and director Alejandro González Iñárritu's first true masterpiece since *Amores Perros*, his 2000 feature-film debut. It's about a Hollywood

movie star who gained fame and fortune in a superhero series (*Birdman* Parts 1 through 3) and now seeks redemption writing, directing, and acting in an artsy Broadway play based on a Raymond Carver story. The plot flirts with pretension, but Iñárritu skirts it by widening the scope—the film is about the craziness of risk, obsession, and diving deep in over your head, through all of life—and by plunging into the craziness, becoming one with it. This is bravura filmmaking: It seems to have been made all in one shot (there are many ten-minute takes, and the rest of the impression comes from clever editing), with the camera frequently moving, sometimes with the actors, sometimes flitting from one actor to another, the mood shifting from comic to



BLU-RAY

STUDIO: Fox, 2014
ASPECT RATIO: 1.85:1
AUDIO FORMAT: DTS-HD Master Audio 5.1
LENGTH: 111 mins
MPAA RATING: R
DIRECTOR: Alejandro G. Iñárritu
STARRING: Michael Keaton, Edward Norton, Emma Stone, Naomi Watts, Zach Galifianakis

PICTURE	★★★★★
SOUND	★★★★★
EXTRAS	★★★★★

tragic, meditative to brawling, and back again, in the space of a minute. It's a backstage drama, but also an inside-your-head drama and a between-two-hardheads drama, too. There's nothing quite like it. I marveled at it on first viewing in the theater, and unlike some fireworks that leave little after the flash, this one, watched again on Blu-ray, holds up.

In fact, my appreciation deepened because this 1080p transfer is so finely crafted. The picture displays all the detail, clarity, and subtle contrasts of the original. I give it four-and-a-half stars instead of five only because in some of the moving long shots, filmed against brick walls, the lines display a bit of moiré. Meanwhile, the soundtrack here

might be better than the theatrical presentation: All the overlapping dialogue is clear; the drums, which supply an almost constant (and usually solo) backdrop, are crisp and dynamic (Antonio Sanchez's score probably didn't nab an Oscar nomination because few Academy members stopped to realize it *was* a score); and the 5.1 surround works to great effect: the talk, crashes, door slams, and so forth zapping from all over the room, precisely matching the space they seem to occupy in relation to the screen.

The ensemble players—Michael Keaton, Edward Norton, Amy Ryan, Emma Stone, Naomi Watts, and Zach Galifianakis—are all terrific, especially Keaton in a role that eerily reflects his own career path: They go deep into their characters and pull out amazing moments, all authentic and passionate, even while the setting and some of the lines hover just above the absurd.

I have one problem with the film, and I'll try not to commit a full spoiler. Near the end, our hero has clearly gone crazy; if there are any doubts, one moment, when a cab driver enters the theater to collect his fare, dispels them (I'll leave it at that). But in the film's final shot, which suggests otherwise, Iñárritu decides to toy with magic realism, and the shift—in tone, message, narrative drive, everything—is not just too abrupt but, more than that, unearned. Other than this, though, I have no problems with this film whatever.

The extras are interesting: some behind-the-scenes sequences, suggesting just how hard it was to shoot this film, and a conversation between Keaton and Iñárritu, probing what it's all about.

● Fred Kaplan

soundandvision.com

"This is my career, this is my chance to do some work that actually means something."



THE HOBBIT: THE BATTLE OF THE FIVE ARMIES

HAS ANYONE SEEN BILBO?

Warner Bros.



A close friend of mine is a die-hard J.R.R. Tolkien fan who never misses an opportunity to regale me with his derision of Peter Jackson's cinematic treatment of *The Hobbit*. If I had a nickel for every time I've heard him bellyache, "That wasn't in the book!" I'd have about 45 cents. Indeed, Tolkien never intended for his book to be chopped up into a trilogy, and the decision to take such a relatively short novel and fan it out over three films must have seemed like a ludicrous idea to some. In Tolkien's exhaustively comprehensive universe, his back stories have back story, and Jackson deftly weaves all of these innumerable threads together into a single narrative while throwing in a few of his own. Arguably, he may have overextended his thrust somewhat. At any rate, following *An Unexpected Journey* and *The Desolation of Smaug*, the epic saga comes to a close with *The Battle of the Five Armies*.

While Jackson is guilty of deviating from Tolkien's original text, he unquestionably succeeds at crafting a fantasy universe that's so visually encompassing, richly detailed, and utterly believable. It's here that the 3D format excels magnificently, with superlative depth of field and clarity between background and foreground elements. I noted only one minor instance of halo effect pertaining to an arrow tip occupying the extreme foreground. Jackson stacks one visually exhilarating scene after another with endless columns of soldiers, expansive halls and chasms, and beautiful scenic vistas. It's a triumph from start to finish, and the 2D version is picture-perfect in every way also. (Part 3 of the *New Zealand: Home of Middle-Earth* featurette can be found on this disc as well.)

The 7.1 DTS-HD Master Audio track is about as good as it gets. Smaug's decimation of Lake Town and the epic final battle are just two highlights in an immersive mix replete with auditory delights that complement the striking visuals, both subtle and thunderous. Center-channel dialogue never has to fight to be heard over the chaos, carnage, and Howard Shore's magnificent score.

Extras include four short featurettes along with a music video. Bonus DVD and Digital Copy are included.

Peter Jackson has accomplished something truly marvelous and unprecedented here, and 3D will ultimately be my preferred choice for viewing these films. I'm holding out hope for 3D versions of the *Lord of the Rings* saga (with a remastered 7.1 DTS-HD soundtrack). I for one will be truly sorry to see the format die before that happens. **● Corey Gunnestad**



BLU-RAY 3D

STUDIO: Warner Bros. 2014

ASPECT RATIO: 2.40:1

AUDIO FORMAT:

DTS-HD Master Audio 7.1

LENGTH: 144 mins.

MPAA RATING: PG-13

DIRECTOR: Peter Jackson

STARRING: Martin Freeman, Ian McKellen, Richard Armitage



BIG HERO 6

HE BLOWED UP GOOD. REAL GOOD.

Disney



Genius teen Hiro Hamada has already lost his parents, but when tragedy strikes again, he uses his scientific know-how to turn mild-mannered, inflatable nurse-bot Baymax into a karate-kicking, armor-plated crime-fighter. But is Hiro out for justice...or vengeance? Either way, the duo can't win this fight without help, and so they join forces with a group of friends to form their own high-tech super-squad, finding plenty of excitement along the way, as well as some important lessons about what it means to be a hero. Inspired by a relatively obscure Marvel Comic, the Oscar-winning *Big Hero 6* is an epic origin saga full of heart and humor.

This animated movie is also beautiful to look at, generous with its sprawling, richly realized vistas of San Fransokyo, a future world unlike any we've seen before. The bustling city comes alive in 1080p, with distinct color palettes for day and night scenes, particularly breathtaking at sunset. The 2.39:1 image boasts outstanding, lifelike shadow detail, notably inside the not-so-abandoned warehouse. The quality is photorealistic down to the inspired subtleties of focus and minute shading on objects like an embossed college seal, and yet the character design and art direction remind us that this is still very much a cartoon, and I use that term in the most respectful sense.

Considering the scope and content of this action-adventure, the DTS-HD Master Audio 7.1-channel soundtrack is remarkably restrained, and the resulting experience might be the better for it. The low end packs ample power when it needs to, without shaking the rafters during explosions and such. Dialogue is dependably clean and legible. The protagonists (and their antagonist) have some wild sci-fi hardware at their disposal, and the surrounds are engaged frequently

but never in a distracting fashion. The wide dynamic range also accommodates the treble squeak of Baymax's vinyl body and his tiny, high-pressure air leaks.

The bonus features are quite good, although more would have been welcome. Four deleted/alternate scenes—none fully animated—come with on-camera director introductions. Co-star Jamie Chung takes us behind the scenes to glimpse the evolution of the story, preceded by a spoiler alert, thankfully. There's a brief featurette on the animators and a guide to the movie's Easter eggs, itself hidden as an Easter egg. *Feast*, the wonderful Academy Award-winning animated short that accompanied *Big Hero 6* theatrically, is included here, as are a DVD and Digital HD copy.

● Chris Chiarella



BLU-RAY

STUDIO: Disney, 2014

ASPECT RATIO: 2.39:1

AUDIO FORMAT:

DTS-HD Master Audio 7.1

LENGTH: 102 mins.

MPAA RATING: PG

DIRECTORS: Don Hall, Chris Williams

STARRING: Scott Adsit, Ryan Potter, Daniel Henney





THE IMITATION GAME

THE REAL DEAL

Anchor Bay



Arguably, no single individual did more to win World War II than Alan Turing. By cracking the Nazi Enigma code, it is estimated that the genius mathematician shortened the war by two years and saved 14 million lives.

So, why isn't he a household name? Father of the computer, Turing (Benedict Cumberbatch) worked in Britain's top-secret Bletchley Park, and his achievements were classified for over 50 years. *The Imitation Game* tells the story of Turing and his fellow code-breakers fighting the clock—and each other—in a race to win the war. Cumberbatch is transcendent as the antisocial, self-absorbed Turing, while Keira Knightley gives her best performance to date as his collaborator and confidante, Joan Clarke. (Both were nominated for Oscars.)

Video quality approaches reference class. From the opening scene, wherein raindrops dance on the roofs of police cars, gobs of subtle detail abound. Check the various wallpaper patterns, textures of clothing and hair, and minute facial features, all of which are resolved with microscopic accuracy. Colors are notably and naturally unsaturated, with a palette of drab greens and blues that only pops with a couple of Knightley's brightly colored outfits. From pure whites to deep blacks, the entire grayscale is flawlessly, cohesively described, and shadows are meticulously rendered. Images are at once sharp and contrasty but never fatiguing. CGI scenes are intentionally murky. Only some very fine grain and noise keep this transfer short of perfection.

Although this docudrama offers few opportunities for spectacular sonics, it will give your system a real workout! The soundtrack delights with clarity, detail, and dynamics. Dialogue intelligibility is beyond criticism, as evidenced by the articulation of British accents. Although there are few hard surround effects, your rear speakers won't lie dormant. Atmospheric effects—crowd noise during pub scenes or birds outdoors at Bletchley Park—are notable both for their consistency and natural detail. From the clatter of typewriters to the rustling of papers, microdynamics are sharp and percussive. A mild bass boost heightens drama and impact.

Happily, the Blu-ray package includes an informative and insightful full-length commentary by director Morton Tyldum and writer Graham Moore. There are only two deleted scenes but one of these, an alternate ending, might have made this superb, Oscar-winning film even better.

● Anthony Chiarella



BLU-RAY

STUDIO: Anchor Bay, 2014
ASPECT RATIO: 2.39:1
AUDIO FORMAT:
 DTS-HD Master Audio 5.1
LENGTH: 114 mins.
MPAA RATING: PG-13
DIRECTOR: Morten Tyldum
STARRING: Benedict Cumberbatch, Keira Knightley, Matthew Goode



UNBROKEN

TWO MEN AND A WAR

Universal



The incredible true story of Olympian and World War II veteran Louis Zamperini languished in Hollywood for decades. It was initially licensed as a project for Tony Curtis, who later abandoned it to star in *Spartacus*. Then came Laura Hillenbrand's bestselling book, *Unbroken*, which caught the attention of producer/director Angelina Jolie and others, and Zamperini's moving story has finally found its moment to shine.

Zamperini (Jack O'Connell) is an Olympic runner whose career is interrupted by the war. While fighting the Japanese, his bomber crash-lands, and Zamperini is left adrift at sea for 47 days with two of his fellow pilots. Eventually captured by the enemy, Zamperini spends the remainder of the war as a POW under the watch of sadistic Japanese Corporal Watanabe (Takamasa Ishihara). Watanabe tries everything he can to defeat Zamperini's spirit, but Zamperini refuses to break under the torture. Working from a script by Joel & Ethan Coen as well as Richard LaGravenese and William Nicholson, Jolie has crafted a powerful biopic with gorgeous imagery and strong performances from a cast of relatively young actors.

Unbroken has the clean and crisp look one would expect from a modern production. Digital it may be, but there is still a beautiful, filmic aspect to the 1080p AVC transfer. We get amazingly nuanced shadow details, spot-on fleshtones, and no instances of compression noise, banding, or other anomalies to interfere with what is a very pleasurable viewing experience.

Universal includes an Atmos mix for this Blu-ray release, but if you are not so enabled, you can still enjoy a wonderful Dolby TrueHD 7.1 mix. The sound varies from bombastic action sequences over the Pacific to quiet passages in the POW camps. The mix variably engulfs us with bombs and machine-gun fire, a swelling rainstorm, or just the din of prison camp workers. The surrounds are active throughout, with solid effects or subtle atmospherics, and dialogue always remains intelligible. Low end is beefy when it needs to be without overwhelming the rest of the soundtrack. We have the honor of getting to know the real Louis Zamperini by way of his on-camera interview among the fine bonus features, along with a substantial making-of program, and, in one of the most dramatic footnotes, a look at how Zamperini finally had his chance to run in the Olympics, in Japan. ● Brandon A. DuHamel



BLU-RAY

STUDIO: Universal, 2014
ASPECT RATIO: 2.40:1
AUDIO FORMAT:
 Dolby Atmos/True HD 7.1
LENGTH: 137 mins.
MPAA RATING: PG-13
DIRECTOR: Angelina Jolie
STARRING: Jack O'Connell, Takamasa Ishihara, Domhnall Gleeson





INTERSTELLAR

IN SPACE, NO ONE CAN HEAR YOU TALK

Paramount



Cooper (Matthew McConaughey) is a swell, resourceful dad... and pilot... and engineer... and farmer. In short, he's the perfect candidate for a dangerous mission to other worlds to help save mankind. The future that he and his family inhabit is bleak, cynical, and full of toxins that are rapidly making life on Earth unsustainable. The only glimmer of hope requires Coop to leave behind everyone and everything he knows to lead a crew across time and space in search of a new home. Back on Earth, our brightest minds are struggling to do their part, and these home and away teams will intersect in a most unexpected way.

Christopher Nolan's *Interstellar* is clearly inspired in part by *2001: A Space Odyssey*, not merely certain visual elements but also Stanley Kubrick's unfortunate lack of urgency. *Interstellar* demands patience, an open mind, and a fairly high IQ, but one thing it does extraordinarily well is conjure the pain of sacrifice felt by the astronauts and those they left behind.

The movie is presented in a shifting aspect ratio owing to its disparate film formats. The 16:9 IMAX scenes can be quite lovely, with some exquisite detail and depth of field, gorgeously composed by director of photography Hoyte Van Hoytema. The 2.39:1 scenes are less impressive, lacking that final bit of nuance we expect from a truly great Blu-ray. The Oscar-winning special effects are first-rate, and an elaborate faux lens flare over Saturn is particularly dazzling in 1080p.

Nolan reportedly took a deliberately different approach to this sound mix, and the resulting DTS-HD Master Audio 5.1 track strikes a frustrating balance between subwoofer and center channel, the former at the expense of the latter. More than once, the dialogue is obscured by Hans Zimmer's musical score. Personally, I found the experience to be bass-heavy and unpleasant, but the movie was nominated for both Sound Mixing and Sound Editing Oscars, so it might come down to individual taste. Just be prepared to adjust your levels, and possibly engage the subtitles.

McConaughey narrates a 50-minute documentary exploring the real science on display, largely the work of noted astrophysicist (and now executive producer) Kip Thorne. And 14 featurettes of varying length take us through most aspects of the production. There's even an IMAX film frame included, especially nifty for folks who've never seen a large-format print up close. ● **Chris Chiarella**



BLU-RAY

STUDIO: Paramount, 2014
ASPECT RATIO: 2.39:1/1.78:1
AUDIO FORMAT:
 DTS-HD Master Audio 5.1
LENGTH: 169 mins.
MPAA RATING: PG-13
DIRECTOR: Christopher Nolan
STARRING: Matthew McConaughey, Anne Hathaway, Jessica Chastain



SULLIVAN'S TRAVELS

BROTHER, CAN YOU SPARE A DOOM?

Criterion Collection

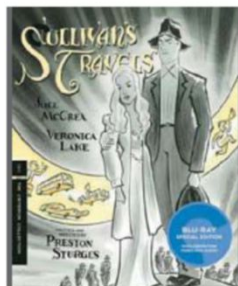


Written and directed by silly-but-serious cynical genius Preston Sturges, *Sullivan's Travels* starts out with a dark and gloomy film-within-a-film showing two figures battling on a train crossing a bridge, symbolizing labor grappling with management to their mutual destruction. But as soon as we get out of the screening room, things lighten up both visually and in mood, the movie becoming a bright, witty slapstick satire on Hollywood and a pretentious, self-important director, Sullivan (Joel McCrea). This auteur wants to make a sociologically and artistically meritorious picture with messages about grim death, war, and the suffering of the unemployed during The Great Depression but, coming from a privileged background, he knows nothing about trouble. So he decides to go looking for it by dressing as a hobo and drifting across America.

In this new 2K digital restoration, contrast is mostly excellent, with deepest black in cars and Sullivan's butlers' outfits and brightest whites in lights, shirts, and skirts, and a smooth range of delectable grays. There's just enough grain to keep images film-like without any loss of resolution, detail being plentiful throughout in textures of tweeds, and other fabrics.

The cleaned-up soundtrack lacks hiss, pops, or crackle. Snappy dialogue is always crisp and clear, as are the strings and woodwinds making up the full and vibrant score that never breaks up or becomes sibilant even in the higher registers. Passing vehicles throb deeply as does the voice of the pastor in the beautiful and moving church choir sequence.

There's a commentary by filmmakers Noah Baumbach, Christopher Guest, Kenneth Bowser, and Michael McKean, each lending a different slant on the film. A 76-minute *American Masters* documentary tells, with plentiful clips, the fascinating, bizarre background leading to the rise and fall of Hollywood's first screenwriter who became a director. There's a video essay by film critic David Cairns with filmmaker Bill Forsyth telling how he learned to make screwball comedy from Sturges' films, an intimate interview with the director's widow that reveals his personality, and archival audio recordings of Sturges singing, reciting, and talking thoughtfully to gossip columnist Hedda Hopper. Together the extras provide a fine, wide-ranging portrait of the man and moviemaker. ● **Josef Krebs**



BLU-RAY

STUDIO: The Criterion Collection, 1941
ASPECT RATIO: 1.37:1
AUDIO: Linear PCM 1.0
LENGTH: 90 mins.
MPAA RATING: NR
DIRECTOR: Preston Sturges
STARRING: Joel McCrea, Veronica Lake, Robert Warwick





GRAVITY DIAMOND LUXE EDITION

IN SPACE, ATMOS REALLY MATTERS

Warner Bros.

During a routine spacewalk from the Space Shuttle, disaster strikes, leaving the Shuttle destroyed and two astronauts stranded in the darkness with death lurking just over the horizon. With their oxygen running low, the two decide to make a desperate play to reach the International Space Station and secure a ride back to Earth, but the journey won't be easy or uneventful.

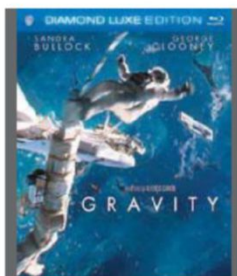
Gravity was the darling of the 2014 Academy Awards, winning seven golden statues out of its ten nominations. It pretty much swept the technical categories, winning for Cinematography, Sound Editing and Mixing, Visual Effects, Film Editing, and to top it off, Directing for Alfonso Cuarón. This is the second release of the movie on Blu-ray, and it comes from Warner with upscale Diamond Luxe packaging, which is a glossy, magnetically sealed book that folds out with pictures of pivotal scenes from the movie. Inside there are two discs, the main feature and one with bonus features.

Sadly, this upscale release of the movie does not include a 3D copy of the film, but we finally get to hear the film how it's supposed to be heard with an Atmos soundtrack—it would have been great if the two were paired up. Regardless, the 2D presentation is outstanding. Blacks are as inky as can be, close-ups are razor-sharp and teeming with detail, and the view down to Earth is mesmerizing.

I found the DTS-HD Master Audio 5.1 track on the original release to be nearly perfect, but the Dolby Atmos (core Dolby TrueHD 7.1) takes things up a notch. The object-based audio track is able to pinpoint sound into specific regions of the soundstage and it definitely creates a more immersive environment. As the film begins, Clooney's character is flying around the Shuttle in his jet pack, and his voice moves from speaker to speaker depending on his location—yes, even above us. As the action kicks in, this is where the track really flexes its muscles. Scenes such as the Shuttle encountering the debris field, the fire aboard the space station, and the escape back to Earth really show how effectively an Atmos track can pull us into a film.

There are four additional supplemental features included on the second disc along with all of the original ones. While not a supplement per se, there is an alternate version of the movie provided, dubbed "*Gravity: Silent Space*." This viewing option presents the entire movie without any music, for a different experience, although the audio here is only Dolby Digital 5.1.

● David Vaughn



BLU-RAY

STUDIO: Warner Bros., 2013
ASPECT RATIO: 2.40:1
AUDIO FORMAT: Dolby Atmos/True HD 7.1
LENGTH: 91 mins.
MPAA RATING: PG-13
DIRECTOR: Alfonso Cuarón
STARRING: Sandra Bullock, George Clooney, Ed Harris



THE HUNGER GAMES: MOCKINGJAY—PART 1

Lionsgate

ARE WE THERE YET?

The Hunger Games: Catching Fire ended with Katniss being rescued from the Hunger Games arena, leaving Peeta behind. Wracked with survivor's guilt, she finds herself in the mythical District 13, reuniting with her little sister, mother, and best friend, who somehow escaped District 12 after the Capitol and its nefarious President Snow bombed it into oblivion following Katniss' escape. District 13 is ready to go on the offensive against Snow and his cronies, but they need Katniss' rebellious and inspiring message to unite the other districts in the uprising, and it's up to Plutarch Heavensbee to enhance our heroine's image for the masses.

The second film in the series, *Catching Fire*, was outstanding, and *Mockingjay*'s new screenwriters Peter Craig and Danny Strong had a lot to live up to. To make things even more challenging for the pair, *Mockingjay* was probably the weakest book of the Suzanne Collins trilogy, and Lionsgate decided to release it in two parts to maximize revenue. This results in some pacing issues akin to a rush-hour traffic jam: a lot of stop and go.

Shot with Arri Alexa digital cameras, the look of the film is like the previous installments. Detail is off the charts, especially in close-ups, and the film's color shading changes from scene to scene, depending on the mood, mostly amber and blue hues. Shadow detail is commendable, especially for something shot digitally, and the CGI blends in well with the live-action shots.

Get ready for Dolby Atmos because here it comes, and Lionsgate is all-in on the new audio format. Having newly installed an Atmos system in my theater, I was more than willing to put it to the test, and *Mockingjay* shows the best of what object-based audio is capable of. For those of you without Atmos, the core track is a Dolby TrueHD 7.1 offering.

Regardless of your flavor, dialogue is clear and concise, and imaging is phenomenal. Atmos really comes alive in the action scenes, especially when the Capitol tries to bomb District 13 into submission: The above-head atmospheric effects place you in the rebels' underground hideout and you can't help but duck for cover.

Supplements include an audio commentary, an homage to Philip Seymour Hoffman, some deleted scenes, and a music video, along with a comprehensive seven-part look at the production that runs over two hours and covers various aspects of the filmmaking process. Finally, there's a sneak peak at *Insurgent*, another popular teen book series adapted by Lionsgate.

● David Vaughn



BLU-RAY

STUDIO: 2014, Lionsgate
ASPECT RATIO: 2.40:1
AUDIO FORMAT: Dolby Atmos/True HD 7.1
LENGTH: 123 mins.
MPAA RATING: PG-13
DIRECTOR: Francis Lawrence
STARRING: Jennifer Lawrence, Josh Hutcherson, Liam Hemsworth



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SONIC HIGHWAYS

FOO FIGHTERS

Photo by Brantley Guterrez



Dave Grohl is fascinated by good sound. In fact, he's *obsessed* by it. After he bought a Neve 8028 analog mixing console from Sound City Studios in Van Nuys, California for use in his own Studio 606 (where the Foo Fighters record), Grohl became enamored with the history of the legendary studio that shuttered its doors for good in 2011. Not only did Grohl's previous band, Nirvana—perhaps you've heard of them?—record 1991's seminal *Nevermind* there, but Sound City was also home base to classic recordings by the likes of Fleetwood Mac, Neil Young, Tom Petty and The Heartbreakers, and Rage Against the Machine. Grohl interviewed many of these and other artists for his acclaimed 2013 documentary/love letter, *Sound City*.

Inspired by his re-acquaintance with Sound City's unique vibe, Grohl decided to explore the singular sonic character of eight different studios across the country for the recording phase of Foo Fighters' 2014 album, *Sonic Highways*. He also chronicled the band's endeavors in each of those studios and their respective cities for an eight-part docu-series of the same name that aired on HBO last fall. Now available on Blu-ray, *Sonic Highways* has been expanded to more than 10 hours of prime behind-the-scenes viewing and listening, especially thanks to Disc 3's 2½ hours of additional in-studio footage and extended interviews, including Grohl's sitdown with President Barack Obama. Each city the band visits—Chicago, Washington, D.C., Nashville, Austin, Los Angeles, New Orleans, Seattle, and New York—clearly has its own special flavor, and Grohl's lens captures many key moments of

inspiration, creation, and experimentation that could only happen in those locations.

"The studio is the oven," Grohl observes early on, and we're right there as the band carefully kneads and leavens every

arrangement, adding those special dollops of Foo-tastic seasoning to the core mixes of drummer Taylor Hawkins' and Grohl's melodic-yet-crunchy bed tracks. Producer Butch Vig—who helmed *Nevermind* and the Foo's triumphant 2011 return to recording on tape, *Wasting Light*—has a level of comfort and ease with each bandmember, which helps coax them into giving better performances in subsequent takes. During the session at Rancho de Luna in Joshua Tree, California for "Outside," right after guitarist Chris Shiflett and a tech land on a gnarly bit of feedback by fiddling with the way the plug goes into his guitar, Vig is able to pinpoint the exact moment it should enter the final mix for maximum impact.

On the bonus disc, we see Grohl's affinity for recording direct to tape in effect, with loving in-action close-ups on an Otari MTR-90 analog multitrack tape recorder at Inner Ear Studios in Arlington, Virginia (during the D.C. episode) and a Studer A827 multichannel recorder at the Magic Shop in New York. In the Seattle episode, longtime collaborator Barrett Jones cues up some of the early solo demos Grohl recorded while on the road with Nirvana in late 1991/early 1992 that were transferred to Ampex 456 Grand Master studio mastering audio tape. (Some of those tracks made their way onto *Songs from the Laundry Room*, an exclusive 10-inch LP released specifically for Record Store Day this past April.)

The surround mixes of the full songs that appear at the end of each episode—complete with every Grohl-handwritten song lyric arriving onscreen in real time as the band plays on—remain true to the initial intent: layered, balls-out jamming in the front channels, with fittingly constructed, supportive ambience in the rear channels. Lead track "Something from Nothing," which also serves as the series' opening-credits theme, delivers the template, with Shiflett's snaky slide guitar and Rami Jaffe's funky keyboards slithering just behind the frontline groove. Vig wisely leaves in the instance where Grohl's voice cracks in the back half of "What Did I Do?/God as My Witness"—a welcome, wholly human moment in this relentless age of Auto-Tune hell.

The best track of the series, "I Am a River," comes at the culmination of the final episode, its emotional buildup buttressed by a string arrangement from noted producer Tony Visconti placed in the absolute heart of the middle of the mix, serving as a fine example of how strings can support a rock song rather than dilute or overwhelm its vibe.

Sonic Highways is a fascinating document of what goes on when a top-tier rock band works in some of America's best recording studios. It also shows how Dave Grohl has an indelible knack for zeroing in on the best way to harness his band's instincts while traveling the road in search of *Sonic nirvana*. ● Mike Mettler

BLU-RAY
LABEL: Roswell/RCA
AUDIO FORMATS: 96-kHz/24-bit Dolby TrueHD 5.1, 96-kHz/24-bit PCM Stereo
NUMBER OF TRACKS: 10 (on 3 discs)
LENGTH: 10:22:05 (7:53:37, eight episodes [Discs 1&2]; 2:28:28, studio documentary & extended interviews [Disc 3])
PRODUCERS: Butch Vig, Foo Fighters
ENGINEER: James Brown

PERFORMANCE ★★★★★
SOUND ★★★★★



Photo by Ringo



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Moving Art Screens. Imagine a painting that scrolls up and down like a window shade, revealing and concealing your TV (and speakers). There are no visible seams, and remote-controlled operation is all but silent. Leon offers an extensive gallery of art and frame options to choose from, or you can have your own artwork reproduced on museum-quality canvas. Available for TVs up to 120 inches (diagonal)—recessed or surface-mounted—the system can be tailored to just about any specifications. Prices range from \$4,995 to \$11,495.

Moving Art Lifts. Another take on the TV concealment theme, Leon offers three options for hiding TVs up to 70 inches wide behind

art, sculptures, mirrors, or decorative panels that reveal or conceal the screen on command. The Eclipse Vertical moves up and down, the Eclipse Horizontal moves left and right, and the Dual Eclipse splits the art panel into two equal sections that “open” to reveal the screen—all done without so much as a hint of tracks. Prices range from \$7,495 to \$12,495.

Edge Media Frame. Encase your TV and a custom-matched soundbar in an elegant frame handcrafted from cherry, oak, maple, or walnut. Leon offers a number of high-quality soundbar options in two-channel, three-channel, and center-channel configurations featuring audiophile-quality drivers. Or you can skip the soundbar and outline only the TV. The frame attaches magnetically to the TV mounting panel for quick removal. Standard finishes include matte black, pearl white, tiger maple, cherry, and black walnut at prices ranging from \$2,495 to \$4,995.—*Bob Ankosko*

Sound & Vision (ISSN 1537-5838) (USPS 504-850) July/August 2015, Vol. 80, No. 6. COPYRIGHT 2015 BY TEN: The Enthusiast Network Magazines, LLC; Published 10 times a year (January, February/March, April, May, June, July/August, September, October, November, December) by TEN: The Enthusiast Network, LLC, 261 Madison Avenue, 6th Floor, New York, NY 10016-2303. Periodicals postage paid at New York, NY and additional mailing offices. Single copy price is \$5.99. **Subscriptions:** U.S., APO, FPO, and U.S. Possessions \$23.94 for 10 issues. Canadian orders add \$10.00 per year and international orders add \$20.00 per year (for surface mail postage). Payment in advance, U.S. funds only. **POSTMASTER:** Send all UAA to CFS. (See DMM 7074.12.5); **NON-POSTAL AND MILITARY FACILITIES:** send address corrections to Sound & Vision, P.O. Box 420235, Palm Coast, FL 32142-0235. **Mailing Lists:** Occasionally, our subscriber list is made available to reputable firms offering goods and services we believe would be of interest to our readers. If you prefer to be excluded, please send your current address label and a note requesting to be excluded from these promotions to TEN: The Enthusiast Network, LLC, 831 S. Douglas St., El Segundo, CA 90245, Attn: Privacy Coordinator. **Subscription Service:** Should you wish to change your address or order new subscriptions, you can e-mail soundandvision@emailcustomerservice.com, call (800) 264-9872 (international calls: 386-447-6383), or write to: Sound & Vision, P.O. Box 420235, Palm Coast, FL 32142-0235.

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